

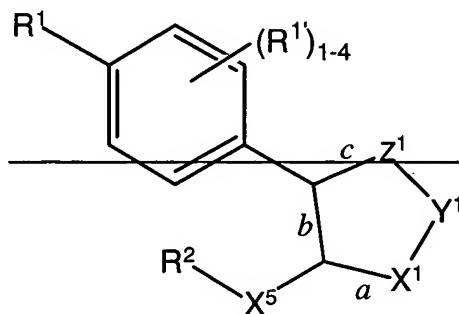
Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) A compound of Formula ~~(I)~~; (II), (III), (IV), (V), (VI), (VII) or ~~(VIII)~~, or a pharmaceutically acceptable salt thereof;

wherein the compound of Formula ~~(I)~~ is:



I

wherein:

when side *b* is a double bond, and sides *a* and *c* are single bonds, $X^1 Y^1 Z^1$ is:

- (a) $CR^4(R^5)CR^5(R^5)CR^4(R^5)$;
- (b) $C(O)CR^4(R^4)CR^5(R^5)$;
- (c) $CR^4(R^4)CR^5(R^5)C(O)$;
- (d) $(CR^5(R^5))_kO-C(O)$;
- (e) $C(O)O(CR^5(R^5))_k$;
- (f) $CR^4(R^4)NR^3CR^5(R^5)$;
- (g) $CR^5(R^5)NR^3C(O)$;
- (h) $CR^4=CR^4S$;
- (i) $S-CR^4=CR^4$;
- (j) $S-N=CR^4$;
- (k) $CR^4=N-S$;
- (l) $N=CR^4O$;
- (m) $O-CR^4=N$;

- (n) ~~NR³ CR⁴ = N~~;
- (o) ~~N = CR⁴ S~~;
- (p) ~~S CR⁴ = N~~;
- (q) ~~C(O) NR³ CR⁵ (R⁵)~~;
- (r) ~~R³ N CR⁵ = C R⁵~~;
- (s) ~~CR⁴ = CR⁵ NR³~~;
- (t) ~~O N = CR⁴~~;
- (u) ~~CR⁴ = N O~~;
- (v) ~~N = N S~~;
- (w) ~~S N = N~~;
- (x) ~~N = CR⁴ NR³~~;
- (y) ~~R³ N N = N~~;
- (z) ~~N = N NR³~~;
- (aa) ~~CR⁴ (R⁴) O CR⁵ (R⁵)~~;
- (bb) ~~CR⁴ (R⁴) S CR⁵ (R⁵)~~;
- (cc) ~~CR⁴ (R⁴) C(O) CR⁵ (R⁵)~~;
- (dd) ~~CR⁴ (R⁴) CR⁵ (R⁵) C(S)~~;
- (ee) ~~(CR⁵ (R⁵))_k O C(S)~~;
- (ff) ~~C(S) O (CR⁵ (R⁵))_k~~;
- (gg) ~~(CR⁵ (R⁵))_k NR³ C(S)~~;
- (hh) ~~C(S) NR³ (CR⁵ (R⁵))_k~~;
- (ii) ~~(CR⁵ (R⁵))_k S C(O)~~;
- (jj) ~~C(O) S (CR⁵ (R⁵))_k~~;
- (kk) ~~O CR⁴ = CR⁵~~;
- (ll) ~~CR⁴ = CR⁵ O~~;
- (mm) ~~C(O) NR³ S~~;
- (nn) ~~S NR³ C(O)~~;
- (oo) ~~C(O) NR³ O~~;
- (pp) ~~O NR³ C(O)~~;
- (qq) ~~NR³ CR⁴ = CR⁵~~;

- (rr) $\text{CR}^4=\text{N}-\text{NR}^3$;
- (ss) $\text{NR}^3-\text{N}=\text{CR}^4$;
- (tt) $\text{C}(\text{O})-\text{NR}^3-\text{NR}^3$;
- (uu) $\text{NR}^3-\text{NR}^3-\text{C}(\text{O})$;
- (vv) $\text{C}(\text{O})-\text{O}-\text{NR}^3$;
- (ww) $\text{NR}^3-\text{O}-\text{C}(\text{O})$;
- (xx) $\text{O}-\text{CR}^4\text{R}^4-\text{C}(\text{S})$;
- (zz) $\text{O}-\text{CR}^4\text{R}^4-\text{C}(\text{O})$;
- (aaa) $\text{C}(\text{S})-\text{CR}^4\text{R}^4-\text{O}$; or
- (yy) $\text{C}(\text{O})-\text{CR}^4\text{R}^4-\text{O}$;

when sides *a* and *c* are double bonds and side *b* is a single bond, $\text{X}^+\text{Y}^+\text{Z}^+$ is:

- (a) $=\text{CR}^4-\text{O}-\text{CR}^5=$;
- (b) $=\text{CR}^4-\text{NR}^3-\text{CR}^5=$;
- (c) $=\text{N}-\text{S}-\text{CR}^4=$;
- (d) $=\text{CR}^4-\text{S}-\text{N}=$;
- (e) $=\text{N}-\text{O}-\text{CR}^4=$;
- (f) $=\text{CR}^4-\text{O}-\text{N}=$;
- (g) $=\text{N}-\text{S}-\text{N}=$;
- (h) $=\text{N}-\text{O}-\text{N}=$;
- (i) $=\text{N}-\text{NR}^3-\text{CR}^4=$;
- (j) $=\text{CR}^4-\text{NR}^3-\text{N}=$;
- (k) $=\text{N}-\text{NR}^3-\text{N}=$;
- (l) $=\text{CR}^4-\text{S}-\text{CR}^5=$; or
- (m) $=\text{CR}^4-\text{CR}^4(\text{R}^4)-\text{CR}^5=$;

R^4 is:

- (a) $\text{S}(\text{O})_2-\text{CH}_3$;
- (b) $\text{S}(\text{O})_2-\text{NR}^8(\text{D}^+)$;
- (c) $\text{S}(\text{O})_2-\text{N}(\text{D}^+)-\text{C}(\text{O})-\text{CF}_3$;
- (d) $\text{S}(\text{O})-(\text{NH})-\text{NH}(\text{D}^+)$;
- (e) $\text{S}(\text{O})-(\text{NH})-\text{N}(\text{D}^+)-\text{C}(\text{O})-\text{CF}_3$;

(f) $\text{P}(\text{O})(\text{CH}_3)\text{NH}(\text{D}^+)$;

(g) $\text{P}(\text{O})(\text{CH}_3)_2$;

(h) $\text{C}(\text{S})\text{NH}(\text{D}^+)$;

(i) $\text{S}(\text{O})(\text{NH})\text{CH}_3$;

(j) $\text{P}(\text{O})(\text{CH}_3)\text{OD}^+$; or

(k) $\text{P}(\text{O})(\text{CH}_3)\text{NH}(\text{D}^+)$;

R¹ at each occurrence is independently:

(a) hydrogen;

(b) halogen;

(c) methyl; or

(d) CH_2OH ;

R² is:

(a) lower alkyl;

(b) cycloalkyl;

(c) mono-, di- or tri-substituted phenyl or naphthyl, wherein the substituents are each independently:

(1) hydrogen;

(2) halo;

(3) alkoxy;

(4) alkylthio;

(5) CN^- ;

(6) haloalkyl, preferably CF_3 ;

(7) lower alkyl;

(8) N_3^- ;

(9) CO_2D^+ ;

(10) CO_2 -lower alkyl;

(11) $(\text{C}(\text{R}^5)(\text{R}^6))_z\text{OD}^+$;

(12) $(\text{C}(\text{R}^5)(\text{R}^6))_z\text{O}$ -lower alkyl;

(13) lower alkyl CO_2R^5 ;

(14) OD^+ ;

(15) haloalkoxy;

(16) amino;

(17) nitro;

(18) alkylsulfinyl; or

(19) heteroaryl;

~~(d) mono-, di-, or tri-substituted heteroaryl, wherein the heteroaryl is a monocyclic aromatic ring of 5 atoms, said ring having one heteroatom which is S, O, or N, and, optionally, 1, 2, or 3 additional N atoms; or the heteroaryl is a monocyclic ring of 6 atoms, said ring having one heteroatom which is N, and, optionally, 1, 2, 3, or 4 additional N atoms; wherein the substituents are each independently:~~

(1) hydrogen;

(2) halo;

(3) lower alkyl;

(4) alkoxy;

(5) alkylthio;

(6) CN;

(7) haloalkyl, preferably CF_3 ;

(8) N_3 ;

(9) ~~$C(R^5)(R^6)OD^+$~~ ;

(10) ~~$C(R^5)(R^6)O$ lower alkyl~~; or

(11) alkylsulfinyl;

(e) benzoheteroaryl which includes the benzo-fused analogs of (d);

(f) ~~$NR^{10}R^{11}$~~ ;

(g) ~~SR^{11}~~ ;

(h) ~~OR^{11}~~ ;

(i) ~~R^{11}~~ ;

(j) alkenyl;

(k) alkynyl;

~~(l) unsubstituted, mono-, di-, tri- or tetra-substituted cycloalkenyl, wherein the substituents are each independently:~~

- (1) ~~halo~~;
- (2) ~~alkoxy~~;
- (3) ~~alkylthio~~;
- (4) ~~CN~~;
- (5) ~~haloalkyl, preferably CF₃~~;
- (6) ~~lower alkyl~~;
- (7) ~~N₃~~;
- (8) ~~CO₂D⁺~~;
- (9) ~~CO₂ lower alkyl~~;
- (10) ~~C(R¹²)(R¹³)OD⁺~~;
- (11) ~~C(R¹²)(R¹³)O lower alkyl~~;
- (12) ~~lower alkyl CO₂R¹²~~;
- (13) ~~benzyloxy~~;
- (14) ~~O (lower alkyl) CO₂R¹²~~;
- (15) ~~O (lower alkyl) NR¹²R¹³ or~~
- (16) ~~alkylsulfinyl~~;

(m) ~~mono, di, tri or tetra substituted heterocycloalkyl group of 5, 6 or 7 members, or a benzoheterocycle, wherein said heterocycloalkyl or benzoheterocycle contains 1 or 2 heteroatoms selected from O, S, or N and, optionally, contains a carbonyl group or a sulfonyl group, and wherein said substituents are each independently:~~

- (1) ~~halo~~;
- (2) ~~lower alkyl~~;
- (3) ~~alkoxy~~;
- (4) ~~alkylthio~~;
- (5) ~~CN~~;
- (6) ~~haloalkyl, preferably CF₃~~;
- (7) ~~N₃~~;
- (8) ~~C(R¹²)(R¹³)OD⁺~~;
- (9) ~~C(R¹²)(R¹³)O lower alkyl~~; or
- (10) ~~alkylsulfinyl~~;

(n) ~~styryl, mono or di substituted styryl, wherein the substituent are each independently:~~

- (1) ~~halo;~~
- (2) ~~alkoxy;~~
- (3) ~~alkylthio;~~
- (4) ~~CN;~~
- (5) ~~haloalkyl, preferably CF₃;~~
- (6) ~~lower alkyl;~~
- (7) ~~N₃;~~
- (8) ~~CO₂D⁺;~~
- (9) ~~CO₂ lower alkyl;~~
- (10) ~~C(R¹²)(R¹³)OD⁺;~~
- (11) ~~C(R¹²)(R¹³)O lower alkyl;~~
- (12) ~~lower alkyl CO₂R¹²;~~
- (13) ~~benzyloxy;~~
- (14) ~~O (lower alkyl) CO₂R¹²; or~~
- (15) ~~O (lower alkyl) NR¹²R¹³;~~

(o) ~~phenylacetylene, mono or di substituted phenylacetylene, wherein the substituents are each independently:~~

- (1) ~~halo;~~
- (2) ~~alkoxy;~~
- (3) ~~alkylthio;~~
- (4) ~~CN;~~
- (5) ~~haloalkyl, preferably CF₃;~~
- (6) ~~lower alkyl;~~
- (7) ~~N₃;~~
- (8) ~~CO₂D⁺;~~
- (9) ~~CO₂ lower alkyl;~~
- (10) ~~C(R¹²)(R¹³)OD⁺;~~
- (11) ~~C(R¹²)(R¹³)O lower alkyl;~~

(12) ~~lower alkyl~~ CO_2R^{12} ;

(13) ~~benzyloxy~~;

(14) ~~O (lower alkyl)~~ CO_2R^{12} ; or

(15) ~~O (lower alkyl)~~ $\text{NR}^{12}\text{R}^{13}$;

(p) ~~fluoroalkenyl~~;

(q) ~~mono or di substituted bicyclic heteroaryl of 8, 9 or 10 members, containing 2, 3, 4 or 5 heteroatoms, wherein at least one heteroatom resides on each ring of said bicyclic heteroaryl, said heteroatoms are each independently O, S and N and said substituents are each independently:~~

(1) ~~hydrogen~~;

(2) ~~halo~~;

(3) ~~lower alkyl~~;

(4) ~~alkoxy~~;

(5) ~~alkylthio~~;

(6) ~~CN~~;

(7) ~~haloalkyl, preferably CF₃~~;

(8) ~~N₃~~;

(9) ~~C(R⁵)(R⁶)OD^t~~; or

(10) ~~C(R⁵)(R⁶)O lower alkyl~~;

(t) ~~K~~;

(s) ~~aryl~~;

(t) ~~arylalkyl~~;

(u) ~~cycloalkylalkyl~~;

(v) ~~C(O)R¹¹~~;

(u) ~~hydrogen~~;

(v) ~~arylalkenyl~~;

(w) ~~arylalkoxy~~;

(x) ~~alkoxy~~;

(y) ~~aryloxy~~;

(z) ~~cycloalkoxy~~;

(aa) ~~arylthio~~;

- (bb) alkylthio;
- (cc) arylalkylthio; or
- (dd) cycloalkylthio;

R^3 is:

- (a) hydrogen;
- (b) haloalkyl, preferably CF_3 ;
- (c) CN ;
- (d) lower alkyl;
- (e) $(C(R_e)(R_f))_p - U - V$;
- (f) K ;
- (g) unsubstituted or substituted:

- (1) lower alkyl Q ;
- (2) lower alkyl O lower alkyl Q ;
- (3) lower alkyl S lower alkyl Q ;
- (4) lower alkyl $O - Q$;
- (5) lower alkyl $S - Q$;
- (6) lower alkyl $O - V$;
- (7) lower alkyl $S - V$;
- (8) lower alkyl $O - K$; or
- (9) lower alkyl $S - K$;

wherein the substituent(s) reside on the lower alkyl group;

- _____ (h) Q ;
- _____ (i) alkylcarbonyl;
- _____ (j) arylcarbonyl;
- _____ (k) alkylarylcarbonyl;
- _____ (l) arylalkylcarbonyl;
- _____ (m) carboxylic ester;
- _____ (n) carboxamide;
- _____ (o) cycloalkyl;

~~(p) mono-, di- or tri-substituted phenyl or naphthyl, wherein the substituents are each independently:~~

- ~~(1) hydrogen;~~
- ~~(2) halo;~~
- ~~(3) alkoxy;~~
- ~~(4) alkylthio;~~
- ~~(5) CN;~~
- ~~(6) haloalkyl, preferably CF₃;~~
- ~~(7) lower alkyl;~~
- ~~(8) N₃;~~
- ~~(9) CO₂D⁺;~~
- ~~(10) CO₂ lower alkyl;~~
- ~~(11) -(C(R⁵)(R⁶))_z-OD⁺;~~
- ~~(12) -(C(R⁵)(R⁶))_z-O-lower alkyl;~~
- ~~(13) lower alkyl CO₂ R⁵;~~
- ~~(14) OD⁺;~~
- ~~(15) haloalkoxy;~~
- ~~(16) amino;~~
- ~~(17) nitro; or~~
- ~~(18) alkylsulfinyl;~~

- ~~(q) alkenyl;~~
- ~~(r) alkynyl;~~
- ~~(s) arylalkyl;~~
- ~~(t) lower alkyl OD⁺;~~
- ~~(u) alkoxyalkyl;~~
- ~~(v) aminoalkyl;~~
- ~~(w) lower alkyl CO₂R⁴⁰;~~
- ~~(x) lower alkyl C(O)NR⁴⁰(R⁴⁰);~~
- ~~(y) heterocyclicalkyl; or~~
- ~~(z) heterocyclic ring C(O);~~

~~R⁴, R⁴ⁱ, R⁵ and R⁵ⁱ are each independently:~~

- (a) ~~hydrogen;~~
- (b) ~~amino;~~
- (c) ~~CN;~~
- (d) ~~lower alkyl;~~
- (e) ~~haloalkyl;~~
- (f) ~~alkoxy;~~
- (g) ~~alkylthio;~~
- (h) ~~Q;~~
- (i) ~~O—Q;~~
- (j) ~~S—Q;~~
- (k) ~~K;~~

~~(l) cycloalkoxy;~~

~~(m) cycloalkylthio;~~

~~(n) unsubstituted, mono-, or di-substituted phenyl or unsubstituted, mono-, or di-substituted benzyl, wherein the substituents are each independently:~~

- (1) ~~halo;~~
- (2) ~~lower alkyl;~~
- (3) ~~alkoxy;~~
- (4) ~~alkylthio;~~
- (5) ~~CN;~~

~~(6) haloalkyl, preferably CF₃;~~

~~(7) N₃;~~

~~(8) Q;~~

~~(9) nitro; or~~

~~(10) amino;~~

~~(o) unsubstituted, mono-, or di-substituted heteroaryl or unsubstituted, mono-, or di-substituted heteroaryl methyl, wherein the heteroaryl is a monocyclic aromatic ring of 5 atoms, said ring having one heteroatom which is S, O, or N, and, optionally, 1, 2, or 3 additional N atoms; or the~~

~~heteroaryl is a monocyclic ring of 6 atoms, said ring having one heteroatom which is N, and, optionally, 1, 2, 3, or 4 additional N atoms; said substituents are each independently:~~

- (1) ~~halo~~;
- (2) ~~lower alkyl~~;
- (3) ~~alkoxy~~;
- (4) ~~alkylthio~~;
- (5) ~~CN~~;
- (6) ~~haloalkyl, preferably CF₃~~;
- (7) ~~N₃~~;
- (8) ~~C(R⁶)(R⁷)OD⁺~~;
- (9) ~~C(R⁶)(R⁷)O lower alkyl; or~~
- (10) ~~alkylsulfinyl~~
- (p) ~~CON(R⁸)(R⁸)~~;
- (q) ~~CH₂OR⁸~~;
- (r) ~~CH₂OCN~~;
- (s) ~~unsubstituted or substituted:~~
 - (1) ~~lower alkyl Q~~;
 - (2) ~~O lower alkyl Q~~;
 - (3) ~~S lower alkyl Q~~;
 - (4) ~~lower alkyl O lower alkyl Q~~;
 - (5) ~~lower alkyl S lower alkyl Q~~;
 - (6) ~~lower alkyl O Q~~;
 - (7) ~~lower alkyl S Q~~;
 - (8) ~~lower alkyl O K~~;
 - (9) ~~lower alkyl S K~~;
 - (10) ~~lower alkyl O V; or~~
 - (11) ~~lower alkyl S V;~~

~~wherein the substituent(s) resides on the lower alkyl;~~

- (t) ~~cycloalkyl~~;
- (u) ~~aryl~~;

- (v) arylalkyl;
- (w) cycloalkylalkyl;
- (x) aryloxy;
- (y) arylalkoxy;
- (z) arylalkylthio;
- (aa) cycloalkylalkoxy;
- (bb) heterocycloalkyl;
- (cc) alkylsulfonyloxy;
- (dd) alkylsulfonyl;
- (ee) arylsulfonyl;
- (ff) arylsulfonyloxy;
- (gg) $C(O)R^{10}$;
- (hh) nitro;
- (ii) amino;
- (jj) aminoalkyl;
- (kk) $C(O)$ alkyl heterocyclic ring;
- (ll) halo;
- (mm) heterocyclic ring;
- (nn) CO_2D^1 ;
- (oo) carboxyl;
- (pp) amidyl; or
- (qq) alkoxyalkyl;

alternatively, R^4 and R^5 together with the carbons to which they are attached are:

- (a) cycloalkyl;
- (b) aryl; or
- (c) heterocyclic ring;

alternatively, R^4 and R^4 or R^5 and R^5 taken together with the carbon to which they are attached are:

- (a) cycloalkyl; or
- (b) heterocyclic ring;

— alternatively, R^4 and R^5 , R^4 and $R^{5'}$, R^4 and $R^{5''}$, or R^4 and R^5 when substituents on adjacent carbon atoms taken together with the carbons to which they are attached are:

- (a) cycloalkyl;
- (b) heterocyclic ring; or
- (c) aryl;

— R^6 and R^7 are each independently:

— (a) hydrogen;

— (b) unsubstituted, mono or di-substituted phenyl; unsubstituted, mono or di-substituted benzyl; unsubstituted, mono or di-substituted heteroaryl; mono or di-substituted heteroaryl methyl, wherein said substituents are each independently:

- (1) halo;
- (2) lower alkyl;
- (3) alkoxy;
- (4) alkylthio;
- (5) CN ;
- (6) haloalkyl, preferably CF_3 ;
- (7) N_3 ;
- (8) $C(R^{14})(R^{15})OD^+$; or
- (9) $C(R^{14})(R^{15})O$ lower alkyl;
- (e) lower alkyl;
- (d) CH_2OR^8 ;
- (e) CN ;
- (f) CH_2CN ;
- (g) haloalkyl, preferably fluoroalkyl;
- (h) $CON(R^8)(R^8)$;
- (i) halo; or
- (j) OR^8 ;

— R^8 is:

- (a) hydrogen;
- (b) K ; or

(e) R^9 ;

— alternatively, R^5 and R^6 , R^6 and R^7 or R^7 and R^8 together with the carbon to which they are attached form a saturated monocyclic ring of 3, 4, 5, 6 or 7 atoms; optionally containing up to two heteroatoms selected from oxygen, $S(O)_n$ or NR_4 ;

— R^9 is:

(a) lower alkyl;

(b) lower alkyl CO_2D^+ ;

(c) lower alkyl NHD^+ ;

(d) phenyl or mono-, di- or tri-substituted phenyl, wherein the substituents are each independently:

(1) halo;

(2) lower alkyl;

(3) alkoxy;

(4) alkylthio;

(5) lower alkyl CO_2D^+ ;

(6) lower alkyl NHD^+ ;

(7) CN ;

(8) CO_2D^+ ; or

— (9) haloalkyl, preferably fluoroalkyl;

(e) benzyl, mono-, di- or tri-substituted benzyl, wherein the substituents are each independently:

(1) halo;

(2) lower alkyl;

(3) alkoxy;

(4) alkylthio;

(5) lower alkyl CO_2D^+ ;

(6) lower alkyl NHD^+ ;

(7) CN ;

(8) CO_2D^+ ; or

— (9) haloalkyl, preferably CF_3 ;

(f) cycloalkyl;

(g) K; or

(h) ~~benzoyl, mono-, di-, or tri-substituted benzoyl, wherein the substituents are each independently:~~

(1) halo;

(2) lower alkyl;

(3) alkoxy;

(4) alkylthio;

(5) lower alkyl CO_2D^+ ;

(6) lower alkyl NHD^+ ;

(7) CN;

(8) CO_2D^+ ; or

(9) haloalkyl, preferably CF_3 ;

R^{10} and R^{10_2} are each independently:

(a) hydrogen; or

(b) R^{11} ;

R^{11} is:

(a) lower alkyl;

(b) cycloalkyl;

(c) ~~unsubstituted, mono-, di- or tri-substituted phenyl or naphthyl, wherein the substituents are each independently:~~

(1) halo;

(2) alkoxy;

(3) alkylthio;

(4) CN;

(5) haloalkyl, preferably CF_3 ;

(6) lower alkyl;

(7) N_3 ;

(8) CO_2D^+ ;

(9) CO_2 lower alkyl;

- (10) $C(R^{+2})(R^{+3})OD^+$;
- (11) $C(R^{+2})(R^{+3})O$ lower alkyl;
- (12) lower alkyl CO_2D^+ ;
- (13) lower alkyl CO_2R^{+2} ;
- (14) benzyloxy;
- (15) O (lower alkyl) CO_2D^+ ;
- (16) O (lower alkyl) CO_2R^{+2} ; or
- (17) O (lower alkyl) $NR^{+2}R^{+3}$;

(d) unsubstituted, mono-, di- or tri-substituted heteroaryl, wherein the heteroaryl is a monocyclic aromatic ring of 5 atoms, said ring having one heteroatom which is S, O, or N, and, optionally, 1, 2, or 3 additional N atoms; or said heteroaryl is a monocyclic ring of 6 atoms, said ring having one heteroatom which is N, and, optionally 1, 2, or 3 additional N atoms, and wherein said substituents are each independently:

- (1) halo;
- (2) lower alkyl;
- (3) alkoxy;
- (4) alkylthio;
- (5) CN ;
- (6) haloalkyl, preferably CF_3 ;
- (7) N_3 ;
- (8) $C(R^{+2})(R^{+3})OD^+$; or
- (9) $C(R^{+2})(R^{+3})O$ lower alkyl;

(e) unsubstituted, mono- or di substituted benzoheterocycle, wherein the benzoheterocycle is a 5, 6, or 7 membered ring which contains 1 or 2 heteroatoms independently selected from O, S, or N, and, optionally, a carbonyl group or a sulfonyl group, wherein said substituents are each independently:

- (1) halo;
- (2) lower alkyl;
- (3) alkoxy;
- (4) alkylthio;

(5) CN ;

— (6) ~~haloalkyl, preferably CF_3~~ ;

(7) N_3 ;

(8) $\text{C}(\text{R}^{12})(\text{R}^{13})\text{OD}^+$; or

(9) $\text{C}(\text{R}^{12})(\text{R}^{13})\text{O}$ lower alkyl;

(f) ~~unsubstituted, mono- or di substituted benzocarboycle, wherein the carboycle is a 5, 6, or 7 membered ring which optionally contains a carbonyl group, wherein said substituents are each independently:~~

(1) ~~halo~~;

(2) ~~lower alkyl~~;

(3) ~~alkoxy~~;

(4) ~~alkylthio~~;

(5) CN ;

— (6) ~~haloalkyl, preferably CF_3~~ ;

(7) N_3 ;

(8) $\text{C}(\text{R}^{12})(\text{R}^{13})\text{OD}^+$; or

(9) $\text{C}(\text{R}^{12})(\text{R}^{13})\text{O}$ lower alkyl;

(g) ~~hydrogen~~; or

(h) K

— R^{12} and R^{13} are each independently:

(a) ~~hydrogen~~;

(b) ~~lower alkyl~~; or

(c) ~~aryl~~; or

R^{12} and R^{13} together with the atom to which they are attached form a saturated monocyclic ring of 3, 4, 5, 6 or 7 atoms;

— R^{14} and R^{15} are each independently:

(a) ~~hydrogen~~; or

(b) ~~lower alkyl~~; or

R^{14} and R^{15} together with the atom to which they are attached form a carbonyl, a thial, or a saturated monocyclic ring of 3, 4, 5, 6 or 7 atoms;

Q is:

- (a) $\text{C}(\text{O})\text{UD}^+$;
- (b) CO_2 -lower alkyl;
- (c) tetrazolyl-5-yl;
- (d) $\text{C}(\text{R}^7)(\text{R}^8)(\text{S}-\text{D}^+)$;
- (e) $\text{C}(\text{R}^7)(\text{R}^8)(\text{O}-\text{D}^+)$; or
- (f) $\text{C}(\text{R}^7)(\text{R}^8)(\text{O}-\text{lower alkyl})$;

X⁵ is:

- (a) $(\text{CR}^{31}\text{R}^{32})_a$;
- (b) $(\text{CR}^{31}\text{R}^{32})_{bb}\text{A}^+$;
- (c) $\text{A}^+(\text{CR}^{31}\text{R}^{32})_{bb}$;
- (d) $\text{CR}^{31}\text{R}^{32}\text{A}^+\text{CR}^{31}\text{R}^{32}$;
- (e) $\text{CR}^{31}=$; or
- (f) A^+ ;

A¹ is:

- (a) oxygen;
- (b) thio;
- (c) sulfinyl;
- (d) sulfonyl; or
- (e) $\text{N}(\text{R}^{33})$;

R³¹ and R³² are each independently:

- (a) hydrogen;
- (b) lower alkyl;
- (c) substituted lower alkyl;
- (d) lower alkoxy;
- (e) lower haloalkyl; or
- (f) halo; or

R³¹ and R³² taken together are:

- (a) oxo;
- (b) thial;

(e) oxime; or

(d) hydrazone;

R^{23} is:

(a) lower alkyl;

(b) hydrogen; or

(c) $C(O)H$;

a is an integer equal to 1 or 3;

bb is an integer equal to 2 or 3;

D^+ is:

(a) hydrogen or

(b) D ;

D is:

(a) V ; or

(b) K ;

U is:

(a) oxygen;

(b) sulfur; or

(c) $N(R_a)(R_i)$;

V is:

(a) NO ;

(b) NO_2 ; or

(c) hydrogen

K is $W_{aa}E_b(C(R_e)(R_f))_pE_e(C(R_e)(R_f))_xW_a(C(R_e)(R_f))_yW_iE_jW_g(C(R_e)(R_f))_zU$ V ;

wherein aa , b , c , d , g , i and j are each independently an integer from 0 to 3;

p , x , y and z are each independently an integer from 0 to 10;

W at each occurrence is independently:

(a) $C(O)$;

(b) $C(S)$;

(c) T ;

(d) $(C(R_e)(R_f))_h$;

- (e) alkyl;
- (f) aryl;
- (g) heterocyclic ring;
- (h) arylheterocyclic ring, or
- (i) $(CH_2CH_2O)_q$;

~~E~~ at each occurrence is independently a ~~T~~ group, an alkyl group, an aryl group, a heterocyclic ring, $(C(R_e)(R_f))_h$, an arylheterocyclic ring or $(CH_2CH_2O)_q$;

~~h~~ is an integer from 1 to 10;

~~q~~ is an integer from 1 to 5;

~~R_e~~ and ~~R_f~~ are each independently a hydrogen, an alkyl, a cycloalkoxy, a halogen, a hydroxy, an hydroxyalkyl, an alkoxyalkyl, an arylheterocyclic ring, a cycloalkylalkyl, a heterocyclicalkyl, an alkoxy, a haloalkoxy, an amino, an alkylamino, a dialkylamino, an arylamino, a diarylamino, an alkylarylamino, an alkoxyhaloalkyl, a haloalkoxy, a sulfonic acid, a sulfonic ester, an alkylsulfonic acid, an arylsulfonic acid, an arylalkoxy, an alkylthio, an arylthio, a cyano, an aminoalkyl, an aminoaryl, an aryl, an arylalkyl, a carboxamido, a alkylcarboxamido, an arylcarboxamido, an amidyl, a carboxyl, a carbamoyl, an alkylcarboxylic acid, an arylcarboxylic acid, an alkylcarbonyl, an arylcarbonyl, an ester, a carboxylic ester, an alkylcarboxylic ester, an arylcarboxylic ester, a haloalkoxy, a sulfonamido, an alkylsulfonamido, an arylsulfonamido, an alkylsulfonyl, an alkylsulfonyloxy, an arylsulfonyl, an arylsulfonyloxy, a urea, a nitro, ~~T~~ Q' , or $(C(R_g)(R_h))_k$ ~~T~~ Q' or ~~R_e~~ and ~~R_f~~ taken together are an oxo, a thial, a heterocyclic ring, a cycloalkyl group, an oxime, a hydrazone or a bridged cycloalkyl group;

~~Q'~~ is ~~NO~~ or ~~NO₂~~;

~~k~~ is an integer from 1 to 3;

~~T~~ is independently a covalent bond, a carbonyl, an oxygen, $S(O)_e$ or $N(R_a)R_b$,

~~e~~ is an integer from 0 to 2;

~~R_a~~ is a lone pair of electrons, a hydrogen or an alkyl group;

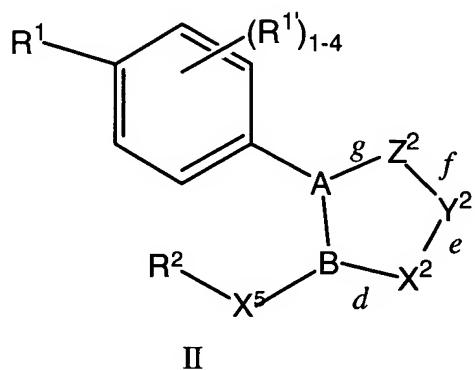
~~R_b~~ is a hydrogen, an alkyl, an aryl, an alkylcarboxylic acid, an arylcarboxylic acid, an alkylcarboxylic ester, an arylcarboxylic ester, an alkylcarboxamido, an arylcarboxamido, an alkylsulfinyl, an alkylsulfonyl, an alkylsulfonyloxy, an arylsulfinyl, an arylsulfonyloxy, an arylsulfonyl, a sulfonamido, a carboxamido, a carboxylic ester, an aminoalkyl, an aminoaryl,

~~—OR'; —CH₂—C(T Q')(R_g)(R_h), a bond to an adjacent atom creating a double bond to that atom or —(N₂O₂)[•]M⁺, wherein M⁺ is an organic or inorganic cation; with the proviso that when R_i is —CH₂—C(T Q')(R_g)(R_h) or —(N₂O₂)[•]M⁺; then "T Q'" can be a hydrogen, an alkyl group, an alkoxyalkyl group, an aminoalkyl group, a hydroxy group or an aryl group;~~

~~R_g and R_h at each occurrence are independently R_e;~~

~~R'; is independently selected from R_i;~~

wherein the compound of Formula (II) is:



wherein:

A-B is:

- (a) N-C;
- (b) C-N; or
- (c) N-N;

when A-B is N-C, sides d and f are double bonds, and sides e and g are single bonds,

X²-Y²-Z² is:

- (a) =CR⁴-CR⁴=CR⁵;
- (b) =N-CR⁴=CR⁴;
- (c) =N-CR⁴=N;
- (d) =CR⁴-N=CR⁴;
- (e) =CR⁴-N=N;
- (f) =N-N=CR⁴;
- (g) =N-N=N; or
- (h) =CR⁴-CR⁵=N;

when A-B is C-N, sides *e* and *g* are double bonds, and sides *d* and *f* are single bonds, -X²-Y²-Z²- is:

- (a) $\text{CR}^4=\text{N}\text{N}=;$
- (b) $\text{N}=\text{N}\text{CR}^4=;$
- (c) $\text{CR}^4=\text{N}\text{CR}^4=;$
- (d) $\text{N}=\text{CR}^4\text{N}=;$
- (e) $-\text{CR}^4=\text{CR}^4-\text{N}=;$
- (f) $\text{N}=\text{CR}^4-\text{CR}^5=;$
- (g) $\text{CR}^4=\text{CR}^5-\text{CR}^5=;$ or
- (h) $\text{N}=\text{N}\text{N}=;$

when A-B is C-N, side *g* is a double bond, and sides *d*, *e* and *f* are single bonds, -X²-Y²-Z²- is:

- (a) $\text{C}(\text{O})\text{O}\text{CR}^4=;$
- (b) $\text{C}(\text{O})\text{NR}^3\text{CR}^4=;$
- (c) $\text{C}(\text{O})\text{S}\text{CR}^4=;$ or
- (d) $\text{C}(\text{H})\text{R}^4-\text{C}(\text{OH})\text{R}^5\text{N}=;$

when A-B is N-C, sides *d* is a double bond, and sides *e*, *f* and *g* are single bonds, -X²-Y²-Z²- is:

- (a) $=\text{CR}^4-\text{O}\text{C}(\text{O})=;$
- (b) $=\text{CR}^4-\text{NR}^3\text{C}(\text{O})=;$
- (c) $=\text{CR}^4-\text{S}\text{C}(\text{O})=;$ or
- (d) $=\text{N}\text{C}(\text{OH})\text{R}^4-\text{C}(\text{H})\text{R}^5=;$

when sides *f* is a double bond, and sides *d*, *e* and *g* are single bonds, -X²-Y²-Z²- is:

- (a) $\text{CH}(\text{R}^4)\text{CR}^5=\text{N};$ or
- (b) $\text{C}(\text{O})\text{CR}^4=\text{CR}^5=;$

when sides *e* is a double bond, and sides *d*, *f* and *g* are single bonds, -X²-Y²-Z²- is:

- (a) $\text{N}=\text{CR}^4-\text{CH}(\text{R}^5);$ or
- (b) $\text{CR}^4=\text{CR}^5-\text{C}(\text{O});$

~~when sides d, e, f and g are single bonds,~~

~~X²-Y²-Z² is:~~

~~(a) C(O)-CR⁴(R⁴)-C(O); and~~

~~with the proviso that when A-B is C-N, then X⁵ must be (CR³¹R³²)_a or (CR³¹R³²)_{bb}-A⁺; and~~

~~wherein R¹, R¹, R², R³, R⁴, R⁵, R⁵, X⁵, A⁺, R³¹, R³², a and bb are as defined herein;~~

R¹ is:

(a) -S(O)₂-CH₃;

(b) -S(O)₂-NR⁸(D¹);

(c) -S(O)₂-N(D¹)-C(O)-CF₃;

(d) -S(O)-(NH)-NH(D¹); or

(e) -S(O)-(NH)-N(D¹)-C(O)-CF₃;

R¹ at each occurrence is independently:

(a) hydrogen;

(b) halogen;

(c) methyl; or

(d) CH₂OH;

R² is:

(a) lower alkyl;

(b) cycloalkyl;

(c) mono-, di- or tri-substituted phenyl or naphthyl, wherein the substituents are each independently:

(1) hydrogen;

(2) halo;

(3) alkoxy;

(4) alkylthio;

(5) CN;

(6) haloalkyl, preferably CF₃;

(7) lower alkyl;

(8) N₃;

(9) -CO₂D¹;

- (10) -CO₂-lower alkyl;
- (11) -(C(R⁵)(R⁶))_z-OD¹;
- (12) -(C(R⁵)(R⁶))_z-O-lower alkyl;
- (13) lower alkyl-CO₂-R⁵;
- (14) -OD¹;
- (15) haloalkoxy;
- (16) amino;
- (17) nitro;
- (18) alkylsulfinyl; or
- (19) heteroaryl;

R³ is:

- (a) hydrogen;
- (b) haloalkyl, preferably CF₃;
- (c) CN;
- (d) lower alkyl;
- (e) -(C(R_e)(R_f))_p-U-V;
- (f) K;
- (g) unsubstituted or substituted:
 - (1) lower alkyl-Q;
 - (2) lower alkyl-O- lower alkyl-Q;
 - (3) lower alkyl-S-lower alkyl-Q;
 - (4) lower alkyl-O-Q;
 - (5) lower alkyl-S-Q;
 - (6) lower alkyl-O-V;
 - (7) lower alkyl-S-V;
 - (8) lower alkyl-O-K; or
 - (9) lower alkyl-S-K;

wherein the substituent(s) reside on the lower alkyl group;

- (h) Q;
- (i) alkylcarbonyl;

- (j) arylcarbonyl;
- (k) alkylarylcarbonyl;
- (l) arylalkylcarbonyl;
- (m) carboxylic ester;
- (n) carboxamido;
- (o) cycloalkyl;
- (p) mono-, di- or tri-substituted phenyl or naphthyl, wherein the substituents are each independently:
 - (1) hydrogen;
 - (2) halo;
 - (3) alkoxy;
 - (4) alkylthio;
 - (5) CN;
 - (6) haloalkyl, preferably CF₃;
 - (7) lower alkyl;
 - (8) N₃;
 - (9) -CO₂D¹;
 - (10) -CO₂-lower alkyl;
 - (11) -(C(R⁵)(R⁶))_z-OD¹;
 - (12) -(C(R⁵)(R⁶))_z-O-lower alkyl;
 - (13) lower alkyl-CO₂-R⁵;
 - (14) -OD¹;
 - (15) haloalkoxy;
 - (16) amino;
 - (17) nitro; or
 - (18) alkylsulfinyl;
- (q) alkenyl;
- (r) alkynyl;
- (s) arylalkyl;
- (t) lower alkyl-OD¹;

(u) alkoxyalkyl;

(v) aminoalkyl;

(w) lower alkyl-CO₂R¹⁰;

(x) lower alkyl-C(O)NR¹⁰(R¹⁰);

(y) heterocyclicalkyl; or

(z) heterocyclic ring-C(O)-;

R⁴, R^{4'}, R⁵ and R^{5'} are each independently:

(a) hydrogen;

(b) amino;

(c) CN;

(d) lower alkyl;

(e) haloalkyl;

(f) alkoxy;

(g) alkylthio;

(h) Q;

(i) -O-Q;

(j) -S-Q;

(k) K;

(l) cycloalkoxy;

(m) cycloalkylthio;

(n) unsubstituted, mono-, or di-substituted phenyl or unsubstituted, mono-, or di-substituted benzyl, wherein the substituents are each independently:

(1) halo;

(2) lower alkyl;

(3) alkoxy;

(4) alkylthio;

(5) CN;

(6) haloalkyl, preferably CF₃;

(7) N₃;

(8) Q;

(9) nitro; or

(10) amino;

(o) unsubstituted, mono-, or di-substituted heteroaryl or unsubstituted, mono-, or di-substituted heteroaryl methyl, wherein the heteroaryl is a monocyclic aromatic ring of 5 atoms, said ring having one heteroatom which is S, O, or N, and, optionally, 1, 2, or 3 additional N atoms; or the heteroaryl is a monocyclic ring of 6 atoms, said ring having one heteroatom which is N, and, optionally, 1, 2, 3, or 4 additional N atoms; said substituents are each independently:

(1) halo;

(2) lower alkyl;

(3) alkoxy;

(4) alkylthio;

(5) CN;

(6) haloalkyl, preferably CF₃;

(7) N₃;

(8) -C(R⁶)(R⁷)-OD¹;

(9) -C(R⁶)(R⁷)-O-lower alkyl; or

(10) alkylsulfinyl

(p) -CON(R⁸)(R⁸);

(q) -CH₂OR⁸;

(r) -CH₂OCN;

(s) unsubstituted or substituted:

(1) lower alkyl-Q;

(2) -O-lower alkyl-Q;

(3) -S-lower alkyl-Q;

(4) lower alkyl-O-lower alkyl-Q;

(5) lower alkyl-S-lower alkyl-Q;

(6) lower alkyl-O-Q;

(7) lower alkyl-S-Q;

(8) lower alkyl-O-K;

(9) lower alkyl-S-K;

(10) lower alkyl-O-V; or

(11) lower alkyl-S-V;

wherein the substituent(s) resides on the lower alkyl;

(t) cycloalkyl;

(u) aryl;

(v) arylalkyl;

(w) cycloalkylalkyl;

(x) aryloxy;

(y) arylalkoxy;

(z) arylalkylthio;

(aa) cycloalkylalkoxy;

(bb) heterocycloalkyl;

(cc) alkylsulfonyloxy;

(dd) alkylsulfonyl;

(ee) arylsulfonyl;

(ff) arylsulfonyloxy;

(gg) -C(O)R¹⁰;

(hh) nitro;

(ii) amino;

(jj) aminoalkyl;

(kk) -C(O)-alkyl-heterocyclic ring;

(ll) halo;

(mm) heterocyclic ring;

(nn) -CO₂D¹;

(oo) carboxyl;

(pp) amidyl; or

(qq) alkoxyalkyl;

alternatively, R⁴ and R⁵ together with the carbons to which they are attached are:

(a) cycloalkyl;

(b) aryl; or

(c) heterocyclic ring;

alternatively, R⁴ and R^{4'} or R⁵ and R^{5'} taken together with the carbon to which they are attached are:

(a) cycloalkyl; or

(b) heterocyclic ring;

alternatively, R⁴ and R⁵, R^{4'} and R^{5'}, R⁴ and R^{5'}, or R^{4'} and R⁵ when substituents on adjacent carbon atoms taken together with the carbons to which they are attached are:

(a) cycloalkyl;

(b) heterocyclic ring; or

(c) aryl;

R⁶ and R⁷ are each independently:

(a) hydrogen;

(b) unsubstituted, mono- or di-substituted phenyl; unsubstituted, mono- or di-substituted benzyl; unsubstituted, mono- or di-substituted heteroaryl; mono- or di-substituted heteroaryl methyl, wherein said substituents are each independently:

(1) halo;

(2) lower alkyl;

(3) alkoxy;

(4) alkylthio;

(5) CN;

(6) haloalkyl, preferably CF₃;

(7) N₃;

(8) -C(R¹⁴)(R¹⁵)-OD¹; or

(9) -C(R¹⁴)(R¹⁵)-O-lower alkyl;

(c) lower alkyl;

(d) -CH₂OR⁸;

(e) CN;

(f) -CH₂CN;

(g) haloalkyl, preferably fluoroalkyl;

(h) -CON(R⁸)(R⁸);

(i) halo; or

(j) -OR⁸;

R⁸ is:

(a) hydrogen;

(b) K; or

(c) R⁹;

alternatively, R⁵ and R⁵, R⁶ and R⁷ or R⁷ and R⁸ together with the carbon to which they are attached form a saturated monocyclic ring of 3, 4, 5, 6 or 7 atoms; optionally containing up to two heteroatoms selected from oxygen, S(O)₀ or NR₁;

R⁹ is:

(a) lower alkyl;

(b) lower alkyl-CO₂D¹;

(c) lower alkyl-NHD¹;

(d) phenyl or mono-, di- or tri-substituted phenyl, wherein the substituents are each independently:

(1) halo;

(2) lower alkyl;

(3) alkoxy;

(4) alkylthio;

(5) lower alkyl-CO₂D¹;

(6) lower alkyl-NHD¹;

(7) CN;

(8) CO₂D¹; or

(9) haloalkyl, preferably fluoroalkyl;

(e) benzyl, mono-, di- or tri-substituted benzyl, wherein the substituents are each independently:

(1) halo;

(2) lower alkyl;

(3) alkoxy;

(4) alkylthio;

(5) lower alkyl-CO₂D¹;

(6) lower alkyl-NHD¹;

(7) CN;

(8) -CO₂D¹; or

(9) haloalkyl, preferably CF₃;

(f) cycloalkyl;

(g) K; or

(h) benzoyl, mono-, di-, or trisubstituted benzoyl, wherein the substituents are each independently:

(1) halo;

(2) lower alkyl;

(3) alkoxy;

(4) alkylthio;

(5) lower alkyl-CO₂D¹;

(6) lower alkyl-NHD¹;

(7) CN;

(8) -CO₂D¹; or

(9) haloalkyl, preferably CF₃;

R¹⁰ and R¹⁰, are each independently:

(a) hydrogen; or

(b) R¹¹;

R¹¹ is:

(a) lower alkyl;

(b) cycloalkyl;

(c) unsubstituted, mono-, di- or tri-substituted phenyl or naphthyl, wherein the substituents are each independently:

(1) halo;

(2) alkoxy;

(3) alkylthio;

(4) CN;

(5) haloalkyl, preferably CF₃;

(6) lower alkyl;

(7) N₃;

(8) -CO₂D¹;

(9) -CO₂-lower alkyl;

(10) -C(R¹²)(R¹³)-OD¹;

(11) -C(R¹²)(R¹³)-O-lower alkyl;

(12) lower alkyl-CO₂D¹;

(13) lower alkyl-CO₂R¹²;

(14) benzyloxy;

(15) -O-(lower alkyl)-CO₂D¹;

(16) -O-(lower alkyl)-CO₂R¹²; or

(17) -O-(lower alkyl)-NR¹²R¹³;

(d) unsubstituted, mono-, di- or tri-substituted heteroaryl, wherein the heteroaryl is a monocyclic aromatic ring of 5 atoms, said ring having one heteroatom which is S, O, or N, and, optionally, 1, 2, or 3 additional N atoms; or said heteroaryl is a monocyclic ring of 6 atoms, said ring having one heteroatom which is N, and, optionally 1, 2, or 3 additional N atoms, and wherein said substituents are each independently:

(1) halo;

(2) lower alkyl;

(3) alkoxy;

(4) alkylthio;

(5) CN;

(6) haloalkyl, preferably CF₃;

(7) N₃;

(8) -C(R¹²)(R¹³)-OD¹; or

(9) -C(R¹²)(R¹³)-O-lower alkyl;

(e) unsubstituted, mono- or di-substituted benzoheterocycle, wherein the benzoheterocycle is a 5, 6, or 7-membered ring which contains 1 or 2 heteroatoms independently

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selected from O, S, or N, and, optionally, a carbonyl group or a sulfonyl group, wherein said substituents are each independently:

- (1) halo;
- (2) lower alkyl;
- (3) alkoxy;
- (4) alkylthio;
- (5) CN;
- (6) haloalkyl, preferably CF₃;
- (7) N₃;
- (8) -C(R¹²)(R¹³)-OD¹; or
- (9) -C(R¹²)(R¹³)-O-lower alkyl;

(f) unsubstituted, mono- or di-substituted benzocarbocycle, wherein the carbocycle is a 5, 6, or 7-membered ring which optionally contains a carbonyl group, wherein said substituents are each independently :

- (1) halo;
- (2) lower alkyl;
- (3) alkoxy;
- (4) alkylthio;
- (5) CN;
- (6) haloalkyl, preferably CF₃;
- (7) N₃;
- (8) -C(R¹²)(R¹³)-OD¹; or
- (9) -C(R¹²)(R¹³)-O-lower alkyl;

(g) hydrogen; or

(h) K

R¹² and R¹³ are each independently:

- (a) hydrogen;
- (b) lower alkyl; or
- (c) aryl; or

R¹² and R¹³ together with the atom to which they are attached form a saturated monocyclic ring of 3, 4, 5, 6 or 7 atoms;

R¹⁴ and R¹⁵ are each independently :

- (a) hydrogen; or
- (b) lower alkyl; or

R¹⁴ and R¹⁵ together with the atom to which they are attached form a carbonyl, a thial, or a saturated monocyclic ring of 3, 4, 5, 6 or 7 atoms;

Q is:

- (a) -C(O)-U-D¹;
- (b) -CO₂-lower alkyl;
- (c) tetrazolyl-5-yl;
- (d) -C(R⁷)(R⁸)(S-D¹);
- (e) -C(R⁷)(R⁸)(O-D¹); or
- (f) -C(R⁷)(R⁸)(O-lower alkyl);

X⁵ is:

- (a) -(CR³¹R³²)_a-;
- (b) -(CR³¹R³²)_{bb}-A¹-;
- (c) -A¹-(CR³¹R³²)_{bb}-;
- (d) -CR³¹R³²-A¹-CR³¹R³²-;
- (e) -CR³¹=; or
- (f) -A¹;

A¹ is:

- (a) oxygen;
- (b) thio;
- (c) sulfinyl;
- (d) sulfonyl; or
- (e) -N(R³³)-;

R³¹ and R³² are each independently:

- (a) hydrogen;
- (b) lower alkyl;

(c) substituted lower alkyl;

(d) lower alkoxy;

(e) lower haloalkyl; or

(f) halo; or

R³¹ and R³² taken together are;

(a) oxo;

(b) thial;

(c) oxime; or

(d) hydrazone;

R³³ is:

(a) lower alkyl;

(b) hydrogen; or

(c) -C(O)H;

a is an integer equal to 1 or 3;

bb is an integer equal to 2 or 3;

D¹ is:

(a) hydrogen or

(b) D;

D is:

(a) V; or

(b) K;

U is:

(a) oxygen;

(b) sulfur; or

(c) -N(R_a)(R_j)-;

V is:

(a) -NO;

(b) -NO₂; or

(c) hydrogen

K is -W_{aa}-E_b-(C(R_e)(R_f))_p-E_c-(C(R_e)(R_f))_x-W_d-(C(R_e)(R_f))_y-W_i-E_j-W_g-(C(R_e)(R_f))_z-U-V;

wherein aa, b, c, d, g, i and j are each independently an integer from 0 to 3;

p, x, y and z are each independently an integer from 0 to 10;

W at each occurrence is independently:

- (a) -C(O)-;
- (b) -C(S)-;
- (c) -T-;
- (d) -(C(R_e)(R_f))_h-;
- (e) alkyl;
- (f) aryl;
- (g) heterocyclic ring;
- (h) arylheterocyclic ring, or
- (i) -(CH₂CH₂O)_q-;

E at each occurrence is independently a -T- group, an alkyl group, an aryl group, a heterocyclic ring, -(C(R_e)(R_f))_h-, an arylheterocyclic ring or -(CH₂CH₂O)_q-;

h is an integer from 1 to 10;

q is an integer from 1 to 5;

R_e and R_f are each independently a hydrogen, an alkyl, a cycloalkoxy, a halogen, a hydroxy, an hydroxyalkyl, an alkoxyalkyl, an arylheterocyclic ring, a cycloalkylalkyl, a heterocyclicalkyl, an alkoxy, a haloalkoxy, an amino, an alkylamino, a dialkylamino, an arylamino, a diarylamino, an alkylarylamino, an alkoxyhaloalkyl, a haloalkoxy, a sulfonic acid, a sulfonic ester, an alkylsulfonic acid, an arylsulfonic acid, an arylalkoxy, an alkylthio, an arylthio, a cyano, an aminoalkyl, an aminoaryl, an aryl, an arylalkyl, a carboxamido, a alkylcarboxamido, an arylcarboxamido, an amidyl, a carboxyl, a carbamoyl, an alkylcarboxylic acid, an arylcarboxylic acid, an alkylcarbonyl, an arylcarbonyl, an ester, a carboxylic ester, an alkylcarboxylic ester, an arylcarboxylic ester, a haloalkoxy, a sulfonamido, an alkylsulfonamido, an arylsulfonamido, an alkylsulfonyl, an alkylsulfonyloxy, an arylsulfonyl, an arylsulfonyloxy, a urea, a nitro, -T-Q'-, or -(C(R_g)(R_h))_k-T-Q' or R_e and R_f taken together are an oxo, a thial, a heterocyclic ring, a cycloalkyl group, an oxime, a hydrazone or a bridged cycloalkyl group;

Q' is -NO or -NO₂;

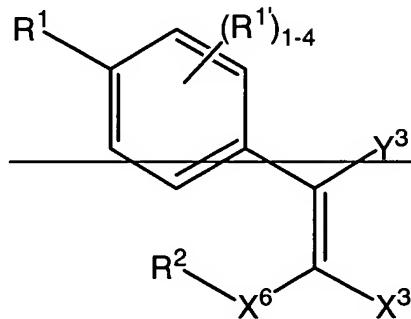
k is an integer from 1 to 3;

T is independently a covalent bond, a carbonyl, an oxygen, -S(O)_o- or -N(R_a)R_j-
o is an integer from 0 to 2,
R_a is a lone pair of electrons, a hydrogen or an alkyl group;
R_j is a hydrogen, an alkyl, an aryl, an alkylcarboxylic acid, an arylcarboxylic acid, an alkylcarboxylic ester, an arylcarboxylic ester, an alkylcarboxamido, an arylcarboxamido, an alkylsulfinyl, an alkylsulfonyl, an alkylsulfonyloxy, an arylsulfinyl, an arylsulfonyloxy, an arylsulfonyl, a sulfonamido, a carboxamido, a carboxylic ester, an aminoalkyl, an aminoaryl, -OR'_j, -CH₂-C(T-Q')(R_g)(R_h), a bond to an adjacent atom creating a double bond to that atom or -(N₂O₂-)•M⁺, wherein M⁺ is an organic or inorganic cation; with the proviso that when R_j is -CH₂-C(T-Q')(R_g)(R_h) or -(N₂O₂-)•M⁺; then "-T-Q'" can be a hydrogen, an alkyl group, an alkoxyalkyl group, an aminoalkyl group, a hydroxy group or an aryl group;

R_g and R_h at each occurrence are independently R_e;

R'_j is independently selected from R_j;

wherein the compound of Formula (III) is:



III

wherein:

X³ is:

- (a) C(O) U D⁺;
- (b) CH₂ U D⁺;
- (c) CH₂ C(O) CH₃;
- (d) CH₂ CH₂ C(O) U D⁺;

(e) $\text{CH}_2\text{O}\text{D}^+$;(f) $\text{C}(\text{O})\text{H}$ or(g) $\text{C}(\text{O})\text{U}\text{R}^{12}$;~~Y³ is:~~(a) $(\text{CR}^5(\text{R}^5))_k\text{UD}^+$;(b) CH_3 ;(c) $\text{CH}_2\text{OC}(\text{O})\text{R}^6$; or(d) $\text{C}(\text{O})\text{H}$;~~R⁸², R^{82'}, R⁸³ and R^{83'} are each independently:~~

(a) hydrogen;

(b) hydroxy;

(c) alkyl;

(d) alkoxy;

(e) lower alkyl-OD⁺;

(f) alkylthio;

(g) CN;

(h) $\text{C}(\text{O})\text{R}^{84}$; or(i) $\text{OC}(\text{O})\text{R}^{85}$;~~R⁸⁴ is:~~

(a) hydrogen;

(b) lower alkyl; or

(c) alkoxy;

~~R⁸⁵ is:~~

(a) lower alkyl;

(b) alkoxy

~~(c) unsubstituted, mono-, di- or tri-substituted phenyl or pyridyl, wherein the substituents are each independently:~~

(1) halo;

(2) alkoxy;

(3) haloalkyl;

(4) CN ;

(5) $\text{C}(\text{O})\text{R}^{84}$;

(6) lower alkyl;

(7) $\text{S}(\text{O})_2$ lower alkyl; or

(8) OD^+ ;

alternatively, R^{82} and R^{83} or R^{82} and R^{83} taken together are:

(a) o xo;

(b) thial;

(c) $=\text{CR}^{86}\text{R}^{87}$; or

(d) $=\text{NR}^{88}$;

R^{86} and R^{87} are each independently:

(a) hydrogen;

(b) lower alkyl;

(c) lower alkyl OD^+ ;

(d) CN ; or

(e) $\text{C}(\text{O})\text{R}^{84}$;

R^{88} is:

(a) OD^+ ;

(b) alkoxy;

(c) lower alkyl; or

(d) unsubstituted, mono-, di- or tri-substituted phenyl or pyridyl, wherein the substituents are each independently:

(1) halo;

(2) alkoxy;

(3) haloalkyl;

(4) CN ;

(5) $\text{C}(\text{O})\text{R}^{84}$;

(6) lower alkyl;

(7) $\text{S}(\text{O})_2$ lower alkyl; or

(8) OD^+ ;

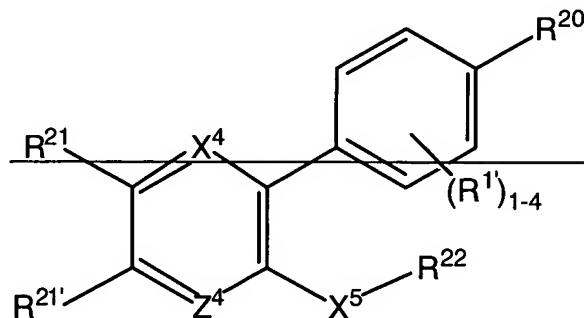
□

X⁶ is:

- (a) $(CR^{31}R^{32})_k$;
- (b) $(CR^{31}R^{32})_{bb}A^+$; or
- (c) $CR^{31}=$; and

wherein R^1 , R^{12} , R^2 , R^5 , R^{51} , R^6 , R^{12} , R^{31} , R^{32} , A^+ , U , D^+ , a , bb , o and k are as defined herein;

wherein the compound of Formula (IV) is:



IV

wherein:

X⁴ and Z⁴ are each independently:

- (a) N; or
- (b) CR^{21} ;

R²⁰ is:

- (a) $S(O)_2-CH_3$;
- (b) $S(O)_2-NR^8(D^+)$; or
- (c) $S(O)_2-N(D^+)-C(O)-CF_3$;

R²¹ and R^{21'} are each independently:

- (a) hydrogen;
- (b) lower alkyl;
- (c) alkoxy;
- (d) alkylthio;
- (e) haloalkyl, preferably fluoroalkyl;

- (f) ~~haloalkoxy, preferably fluoroalkoxy;~~
- (g) ~~CN;~~
- (h) ~~CO₂D⁺;~~
- (i) ~~CO₂R¹⁴;~~
- (j) ~~lower alkyl-O-D⁺;~~
- (k) ~~lower alkyl-CO₂D⁺;~~
- (l) ~~lower alkyl-CO₂R¹⁴;~~
- (m) ~~halo;~~
- (n) ~~O-D⁺;~~
- (o) ~~N₃;~~
- (p) ~~NO₂;~~
- (q) ~~NR¹⁴D⁺;~~
- (r) ~~N(D⁺)C(O)R¹⁴;~~
- (s) ~~NHK;~~
- (t) ~~aryl;~~
- (u) ~~arylalkylthio;~~
- (v) ~~arylalkoxy;~~
- (w) ~~alkylamino;~~
- (x) ~~aryloxy;~~
- (y) ~~alkylarylalkylamino;~~
- (z) ~~cycloalkylalkylamino; or~~
- (aa) ~~cycloalkylalkoxy;~~

R²² is:

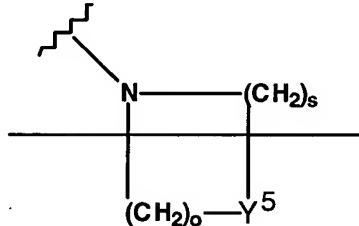
(a) ~~mono-, di- or tri-substituted phenyl or pyridinyl (or the N-oxide thereof), wherein the substituent are each independently:~~

- (1) ~~hydrogen;~~
- (2) ~~halo;~~
- (3) ~~alkoxy;~~
- (4) ~~alkylthio;~~
- (5) ~~CN;~~

- (6) lower alkyl;
- (7) haloalkyl, preferably fluoroalkyl;
- (8) N₃;
- (9) CO₂D⁺;
- (10) CO₂ lower alkyl;
- (11) C(R¹⁴)(R¹⁵)OD⁺;
- (12) OD⁺;
- (13) lower alkyl CO₂R¹⁴; or
- (14) lower alkyl CO₂D⁺;

(b) T-C(R²³)(R²⁴)-(C(R²⁵)(R²⁶))₆-C(R²⁷)(R²⁸)-U-D⁺;

(e)



(d) arylalkyl; or

(e) cycloalkylalkyl;

wherein:

R¹⁴ and R¹⁵ are each independently:

(a) hydrogen; or

(b) lower alkyl;

R²³, R²⁴, R²⁵, R²⁶, R²⁷, R²⁸ are each independently:

(a) hydrogen; or

(b) lower alkyl; or

R²³ and R²⁷, or R²⁷ and R²⁸ together with the atoms to which they are attached form a carbocyclic ring of 3, 4, 5, 6 or 7 atoms, or R²³ and R²⁵ are joined to form a covalent bond;

Y⁵ is:

(a) CR²⁹R³⁰;

(b) oxygen; or

~~(e) sulfur;~~

~~R²⁹ and R³⁰ are each independently:~~

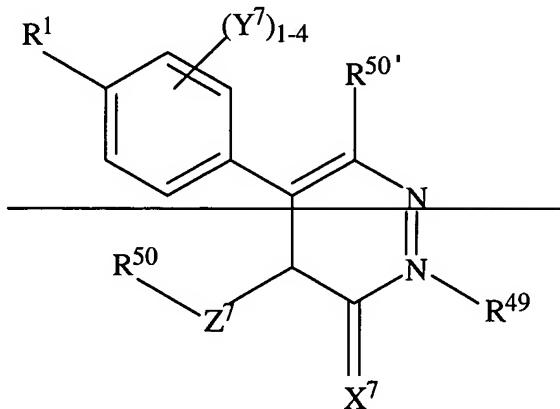
- ~~(a) hydrogen;~~
- ~~(b) lower alkyl;~~
- ~~(c) (CH₂)₆OD⁺;~~
- ~~(d) halo; or~~

~~R²⁹ and R³⁰ taken together are an exo group;~~

~~s is an integer from 2 to 4; and~~

~~wherein R¹², R⁸, X⁵, D¹, T, U, K and o are as defined herein;~~

~~wherein the compound of Formula (V) is:~~



V

~~wherein:~~

~~X⁷ is:~~

- ~~(a) oxygen;~~
- ~~(b) sulfur;~~
- ~~(c) NR⁵¹;~~
- ~~(d) N-O-R⁵²; or~~

~~(e) N-NR⁵²R⁵³;~~

~~Y⁷ at each occurrence is independently:~~

- ~~(a) hydrogen;~~
- ~~(b) halo;~~

(c) lower alkyl;

(d) alkenyl; or

(e) alkynyl;

— Z^7 is:

(a) $(CR^{31}R^{32})_n$;

— R^{49} is:

(a) R^3 ; or

(b) R^4 ;

— R^{50} and $R^{50'}$ are each independently:

(a) hydrogen;

(b) halo;

(c) lower alkyl;

(d) aryl;

(e) arylalkyl;

(f) cycloalkyl;

(g) cycloalkylalkyl;

(h) OD^+ ;

(i) lower alkyl OD^+ ;

(j) carboxamido;

(k) amidyl; or

(l) K ;

— R^{51} is:

(a) lower alkyl;

(b) alkenyl;

(c) cycloalkyl;

(d) cycloalkylalkyl;

(e) aryl;

(f) arylalkyl;

(g) heterocyclic ring; or

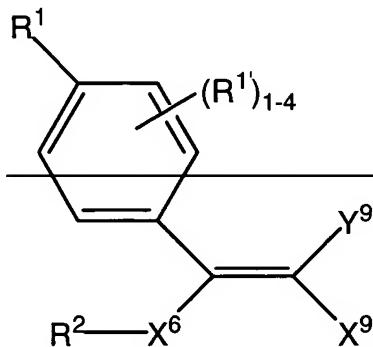
(h) lower alkyl heterocyclic ring;

~~R⁵² and R⁵³ are each independently:~~

- (a) ~~lower alkyl;~~
- (b) ~~cycloalkyl;~~
- (c) ~~cycloalkylalkyl;~~
- (d) ~~aryl;~~
- (e) ~~arylalkyl;~~
- (f) ~~heterocyclic ring; or~~
- (g) ~~heterocyclicalkyl; and~~

~~wherein R¹, R³, R⁴, R³¹, R³², K, D¹ and a are as defined herein;~~

~~wherein the compound of Formula (VI) is:~~



VI

~~wherein:~~

~~X⁹ is C(O)=U=D¹ and Y⁹ is CH₂=CR⁵(R^{5'})=U=D¹; or~~

~~X⁹ is CH₂=CR⁵(R^{5'})=U=D¹ and Y⁹ is C(O)=U=D¹; or~~

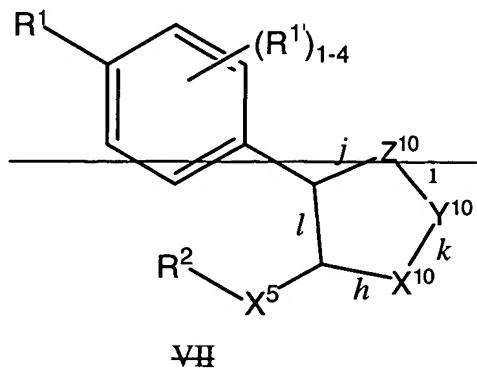
~~X⁹ and Y⁹ taken together are:~~

- ~~(a) C(O)O CR⁴(R^{4'})CR⁵(R^{5'});~~
- ~~(b) (CR⁴(R^{4'}))_kCR⁵(R^{5'})CR⁵(R^{5'});~~
- ~~(c) C(O)(CR⁴(R^{4'}))_kCR⁵(R^{5'});~~
- ~~(d) (CR⁴(R^{4'}))_kCR⁵(R^{5'})C(O); or~~
- ~~(e) C(O)CR⁴(R^{4'})CR⁵(R^{5'});~~

~~wherein X⁹ is the first carbon atom of a, b, c, d and e; and~~

— wherein R^1 , R^{11} , R^2 , R^4 , R^{41} , R^5 , R^{51} , X^6 , U , D^1 and k are as defined herein;

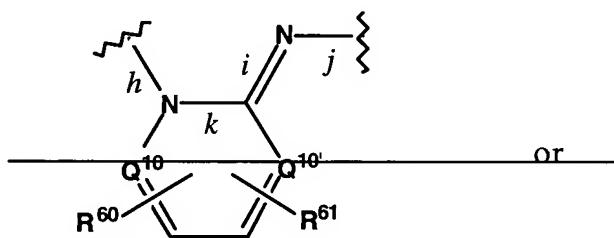
wherein the compound of Formula (VII) is:



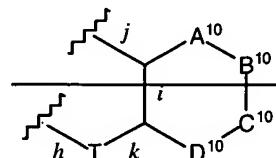
wherein:

— when side h , k , and j are single bonds, and side i and l are a double bond, $X^{10}Y^{10}Z^{10}$ is:

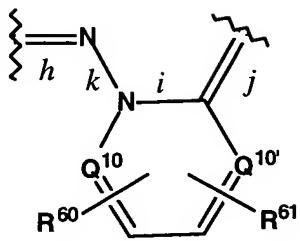
— (a)



— (b)

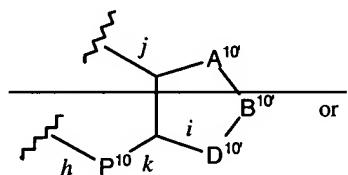


when sides i , k and l are single bonds, and sides h and j are double bonds, $X^{10}Y^{10}Z^{10}$ is:

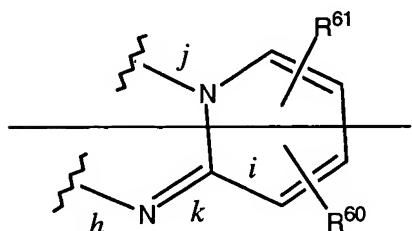


— when side *h* and *j* are single bonds, *i* is a double bond, and side *k* and *i* is a single or a double bond, $X^{10} - Y^{10} - Z^{10}$ is:

(a)



(b)



P^{10} is:

- (a) $N=$;
- (b) NR^3 ;
- (c) O ; or
- (d) S ;

Q^{10} and $Q^{10'}$ are each independently:

(a) CR^{60} ; or

(b) nitrogen;

$A^{10} - B^{10} - C^{10} - D^{10}$ is:

- (a) $\text{CR}^4 = \text{CR}^4 - \text{CR}^5 = \text{CR}^5 -$;
- (b) $\text{CR}^4(\text{R}^4) - \text{CR}^5(\text{R}^5) - \text{CR}^4(\text{R}^4) - \text{C}(\text{O}) -$;
- (c) $\text{CR}^4(\text{R}^4) - \text{CR}^5(\text{R}^5) - \text{C}(\text{O}) - \text{CR}^4(\text{R}^4) -$;
- (d) $\text{CR}^4(\text{R}^4) - \text{C}(\text{O}) - \text{CR}^4(\text{R}^4) - \text{CR}^5(\text{R}^5) -$;
- (e) $\text{C}(\text{O}) - \text{CR}^4(\text{R}^4) - \text{CR}^5(\text{R}^5) - \text{CR}^4(\text{R}^4) -$;
- (f) $\text{CR}^4(\text{R}^4) - \text{CR}^5(\text{R}^5) - \text{C}(\text{O}) -$;
- (g) $\text{CR}^4(\text{R}^4) - \text{C}(\text{O}) - \text{CR}^5(\text{R}^5) -$;
- (h) $\text{C}(\text{O}) - \text{CR}^4(\text{R}^4) - \text{CR}^5(\text{R}^5) -$;
- (i) $\text{CR}^4(\text{R}^4) - \text{CR}^5(\text{R}^5) - \text{O} - \text{C}(\text{O}) -$;
- (j) $\text{CR}^4(\text{R}^4) - \text{O} - \text{C}(\text{O}) - \text{CR}^5(\text{R}^5) -$;
- (k) $\text{O} - \text{C}(\text{O}) - \text{CR}^4(\text{R}^4) - \text{CR}^5(\text{R}^5) -$;
- (l) $\text{CR}^4(\text{R}^4) - \text{CR}^5(\text{R}^5) - \text{C}(\text{O}) - \text{O} -$;
- (m) $\text{CR}^4(\text{R}^4) - \text{C}(\text{O}) - \text{O} - \text{CR}^5(\text{R}^5) -$;
- (n) $\text{C}(\text{O}) - \text{O} - \text{CR}^4(\text{R}^4) - \text{CR}^5(\text{R}^5) -$;
- (o) $\text{CR}^{12}(\text{R}^{12}) - \text{O} - \text{C}(\text{O}) -$;
- (p) $\text{C}(\text{O}) - \text{O} - \text{CR}^{12}(\text{R}^{12}) -$;
- (q) $\text{O} - \text{C}(\text{O}) - \text{CR}^{12}(\text{R}^{12}) -$;
- (r) $\text{CR}^{12}(\text{R}^{12}) - \text{C}(\text{O}) - \text{O} -$;
- (s) $\text{N} = \text{CR}^4 - \text{CR}^4 = \text{CR}^5 -$;
- (t) $\text{CR}^4 = \text{N} - \text{CR}^4 = \text{CR}^5 -$;
- (u) $\text{CR}^4 = \text{CR}^4 - \text{N} = \text{CR}^5 -$;
- (v) $\text{CR}^4 = \text{CR}^5 - \text{CR}^5 = \text{N} -$;
- (w) $\text{N} = \text{CR}^4 - \text{CR}^4 = \text{N} -$;
- (x) $\text{N} = \text{CR}^4 - \text{N} = \text{CR}^4 -$;
- (y) $\text{CR}^4 = \text{N} - \text{CR}^4 = \text{N} -$;
- (z) $\text{S} - \text{CR}^4 = \text{N} -$;

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- _____ (aa) ~~S-N=CR⁴~~;
- _____ (bb) ~~N=N NR³~~;
- _____ (cc) ~~CR⁴=N S~~;
- _____ (dd) ~~N=CR⁴ S~~;
- _____ (ee) ~~O CR⁴=N~~;
- _____ (ff) ~~O N=CR⁴~~; or
- _____ (gg) ~~N=CR⁴ O~~;

~~A¹⁰, B¹⁰, D¹⁰, is:~~

- _____ (a) ~~CR⁴=CR⁵ CR⁵=~~
- _____ (b) ~~CR⁴(R⁴) CR⁵(R⁵) CR⁴(R⁴)~~;
- _____ (c) ~~C(O) CR⁴(R⁴) CR⁵(R⁵)~~;
- _____ (d) ~~CR⁴(R⁴) CR⁵(R⁵) C(O)~~;
- _____ (e) ~~N=CR⁴ CR⁵=~~;
- _____ (g) ~~N=N CR⁴=~~;
- _____ (h) ~~N=N NR³~~;
- _____ (i) ~~N=N N=~~;
- _____ (j) ~~N=CR⁴ NR³~~;
- _____ (k) ~~N=CR⁴ N=~~;
- _____ (l) ~~CR⁴=N NR³~~;
- _____ (m) ~~CR⁴=N N=~~;
- _____ (n) ~~CR⁴=N CR⁵=~~;
- _____ (o) ~~CR⁴=CR⁵ NR³~~;
- _____ (p) ~~CR⁴=CR⁵ N=~~;
- _____ (q) ~~S CR⁴=CR⁵~~;
- _____ (r) ~~O CR⁴=CR⁵~~;
- _____ (s) ~~CR⁴=CR⁵ O~~;
- _____ (t) ~~CR⁴=CR⁵ S~~;
- _____ (u) ~~CR⁴=N S~~;
- _____ (v) ~~CR⁴=N O~~;
- _____ (w) ~~N=CR⁴ S~~;

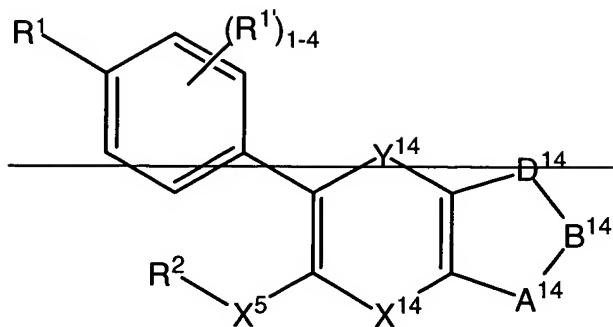
- (x) $\text{N}=\text{CR}^4-\text{O}-$;
- (y) $\text{S}-\text{CR}^4=\text{N}-$;
- (z) $\text{O}-\text{CR}^4=\text{N}-$;
- (aa) $\text{N}=\text{N}-\text{S}-$;
- (bb) $\text{N}=\text{N}-\text{O}-$;
- (cc) $\text{S}-\text{N}=\text{N}-$;
- (dd) $\text{O}-\text{N}=\text{N}-$;
- (ee) $\text{CR}^4=\text{CR}^5-\text{S}-$;
- (ff) $\text{CR}^4(\text{R}^4)-\text{CR}^5(\text{R}^5)-\text{S}-$;
- (gg) $\text{CR}^4(\text{R}^4)-\text{CR}^5(\text{R}^5)-\text{O}-$;
- (hh) $\text{S}-\text{CR}^4(\text{R}^4)-\text{CR}^5(\text{R}^5)-\text{O}-$; or
- (ii) $\text{O}-\text{CR}^4(\text{R}^4)-\text{CR}^5(\text{R}^5)-$;

R^{60} and R^{61} are each independently:

- (a) lower alkyl;
- (b) haloalkyl, preferably fluoroalkyl;
- (c) alkoxy;
- (d) alkylthio;
- (e) lower alkyl OD^+ ;
- (f) $\text{C}(\text{O})\text{H}$;
- (g) $(\text{CH}_2)_q-\text{CO}_2$ lower alkyl;
- (h) $(\text{CH}_2)_q-\text{CO}_2\text{D}^+$;
- (i) $(\text{CH}_2)_q-\text{CO}_2\text{D}^+$;
- (j) $\text{O}-(\text{CH}_2)_q-\text{S}$ lower alkyl;
- (k) $(\text{CH}_2)_q-\text{S}$ lower alkyl;
- (l) $\text{S}(\text{O})_2$ lower alkyl;
- (m) $(\text{CH}_2)_q-\text{NR}^{12}\text{R}^{13}$; or
- (n) $\text{C}(\text{O})\text{N}(\text{R}^8)(\text{R}^8)$; and

wherein $\text{R}^1, \text{R}^2, \text{R}^3, \text{R}^4, \text{R}^5, \text{R}^{5'}, \text{R}^8, \text{R}^{12}, \text{R}^{13}, \text{X}^5, \text{T}, \text{D}^+$ and q are as defined herein;

wherein the compound of Formula (VIII) is:



VIII

wherein:

X¹⁴ is:

(a) C(O); or
 (b) C(S);

Y¹⁴ is:

(a) O; or
 (b) S;

A¹⁴ B¹⁴ D¹⁴ is:

(a) CR⁴=CR⁴-CR⁵=CR⁵;
 (b) CR⁴(R⁴)-CR⁵(R⁵)-C(O);
 (c) CR⁴(R⁴)-C(O)-CR⁵(R⁵);
 (d) C(O)-CR⁴(R⁴)-CR⁵(R⁵);
 (e) CR⁴(R⁵)-O-C(O);
 (f) C(O)-O-CR⁴(R⁵);
 (g) O-C(O)-CR⁴(R⁵);
 (h) S-N=CR⁴;
 (i) O-N=CR⁴;
 (j) CR⁴(R⁵)-NR³-C(O);
 (k) C(O)-NR³-CR⁴(R⁵);
 (l) NR³-C(O)-CR⁴(R⁵);
 (m) CR⁴(R⁵)-S-C(O);
 (n) C(O)-S-CR⁴(R⁵);

- _____ (e) ~~S-C(O)-CR⁴(R⁵)~~;
- _____ (p) ~~CR⁴=CR⁴-C(O)~~;
- _____ (q) ~~C(O)-CR⁴=CR⁴~~;
- _____ (r) ~~O-CR⁴=CR⁴~~;
- _____ (s) ~~S-CR⁴=CR⁴~~;
- _____ (t) ~~NR³-CR⁴=CR⁵~~;
- _____ (u) ~~S-NR³-C(O)~~;
- _____ (v) ~~O-NR³-C(O)~~; or
- _____ (w) ~~NR³-N=CR⁴~~; and

wherein R¹, R^{1'}, R², R³, R⁴, R^{4'}, R⁵, R^{5'} and X⁵ are as defined herein.

2. (Original) A composition comprising the compound of claim 1 and a pharmaceutically acceptable carrier.

3. (Withdrawn) A method for treating or reducing inflammation, pain or fever in a patient in need thereof comprising administering to the patient a therapeutically effective amount of the composition of claim 2.

4. (Withdrawn) A method for treating a gastrointestinal disorder, or improving the gastrointestinal properties of a COX-2 inhibitor in a patient in need thereof comprising administering to the patient a therapeutically effective amount of the composition of claim 2.

5. (Withdrawn) The method of claim 4, wherein the gastrointestinal disorder is an inflammatory bowel disease, Crohn's disease, gastritis, irritable bowel syndrome, ulcerative colitis, a peptic ulcer, a stress ulcer, a bleeding ulcer, gastric hyperacidity, dyspepsia, gastroparesis, Zollinger-Ellison syndrome, gastroesophageal reflux disease, a bacterial infection, short-bowel (anastomosis) syndrome, or a hypersecretory state associated with systemic mastocytosis or basophilic leukemia and hyperhistaminemia

6. (Withdrawn) A method for facilitating wound healing in a patient in need thereof comprising administering to the patient a therapeutically effective amount of the composition of claim 2.

7. (Withdrawn) The method of claim 6, wherein the wound is an ulcer.

8. (Withdrawn) A method for treating or reversing renal and/or respiratory toxicity in a patient in need thereof comprising administering to the patient a therapeutically effective amount of the composition of claim 2.

9. (Withdrawn) A method for treating a disorder resulting from elevated levels of COX-2 in a patient in need thereof comprising administering to the patient a therapeutically effective amount of the composition of claim 2.

10. (Withdrawn) The method of claim 9, wherein the disorder resulting from elevated levels of COX-2 is angiogenesis, arthritis, asthma, bronchitis, menstrual cramps, premature labor, tendinitis, bursitis, a skin-related condition, neoplasia, an inflammatory process in a disease, an ophthalmic disorder, pulmonary inflammation, a central nervous system disorder, allergic rhinitis, respiratory distress syndrome, endotoxin shock syndrome, atherosclerosis, a microbial infection, a cardiovascular disorder, a urinary disorder, a urological disorder, endothelial dysfunction, organ deterioration, tissue deterioration, or activation, adhesion and infiltration of neutrophils at the site of inflammation.

11. (Withdrawn) The method of claim 10, wherein the neoplasia is a brain cancer, a bone cancer, an epithelial cell-derived neoplasia (epithelial carcinoma), a basal cell carcinoma, an adenocarcinoma, a gastrointestinal cancer, a lip cancer, a mouth cancer, an esophageal cancer, a small bowel cancer, a stomach cancer, a colon cancer, a liver cancer, a bladder cancer, a pancreas cancer, an ovary cancer, a cervical cancer, a lung cancer, a breast cancer, a skin cancer, a squamous cell cancer, a basal cell cancer, a prostate cancer, a renal cell carcinoma, a cancerous tumor, a growth, a polyp, an adenomatous polyp, a familial adenomatous polyposis or a fibrosis resulting from radiation therapy.

12. (Withdrawn) The method of claim 10, wherein the central nervous system disorder is cortical dementia, Alzheimer's disease, vascular dementia, multi-infarct dementia, pre-senile dementia, alcoholic dementia, senile dementia, or central nervous system damage resulting from stroke, ischemia or trauma.

13. (Withdrawn) A method for inhibiting platelet aggregation in a patient in need thereof comprising administering to the patient a therapeutically effective amount of the composition of claim 2.

14. (Original) The composition of claim 2, further comprising at least one therapeutic agent.

15. (Original) The composition of claim 14, wherein the therapeutic agent is a steroid, a nonsteroidal antiinflammatory compound, a 5-lipoxygenase (5-LO) inhibitor, a leukotriene B₄ receptor antagonist, a leukotriene A₄ hydrolase inhibitor, a 5-HT agonist, a 3-hydroxy-3-methylglutaryl coenzyme A inhibitor, a H₂ antagonist, an antineoplastic agent, an antiplatelet agent, a thrombin inhibitor, a thromboxane inhibitor, a decongestant, a diuretic, a sedating or non-sedating anti-histamine, an inducible nitric oxide synthase inhibitor, an opioid, an analgesic, a *Helicobacter pylori* inhibitor, a proton pump inhibitor, an isoprostane inhibitor, or a mixture of two or more thereof.

16. (Original) The composition of claim 15, wherein the nonsteroidal antiinflammatory compound is acetaminophen, aspirin, diclofenac, ibuprofen, ketoprofen, indomethacin or naproxen.

17. (Withdrawn) A method for treating or reducing inflammation, pain or fever in a patient in need thereof comprising administering to the patient a therapeutically effective amount of the composition of claim 14.

18. (Withdrawn) A method for treating a gastrointestinal disorder, or improving the gastrointestinal properties of a COX-2 inhibitor in a patient in need thereof comprising administering to the patient a therapeutically effective amount of the composition of claim 14.

19. (Withdrawn) The method of claim 18, wherein the gastrointestinal disorder is an inflammatory bowel disease, Crohn's disease, gastritis, irritable bowel syndrome, ulcerative colitis, a peptic ulcer, a stress ulcer, a bleeding ulcer, gastric hyperacidity, dyspepsia, gastroparesis, Zollinger-Ellison syndrome, gastroesophageal reflux disease, a bacterial infection, short-bowel (anastomosis) syndrome, or a hypersecretory state associated with systemic mastocytosis or basophilic leukemia and hyperhistaminemia.

20. (Withdrawn) A method for facilitating wound healing in a patient in need thereof comprising administering to the patient a therapeutically effective amount of the composition of claim 14.

21. (Withdrawn) The method of claim 20, wherein the wound is an ulcer.

22. (Withdrawn) A method for treating or reversing renal and/or respiratory toxicity in a patient in need thereof comprising administering to the patient a therapeutically effective amount of the composition of claim 14.

23. (Withdrawn) A method for treating a disorder resulting from elevated levels of COX-2 in a patient in need thereof comprising administering to the patient a therapeutically effective amount of the composition of claim 14.

24. (Withdrawn) The method of claim 23, wherein the disorder resulting from elevated levels of COX-2 is angiogenesis, arthritis, asthma, bronchitis, menstrual cramps, premature labor, tendinitis, bursitis, a skin-related condition, neoplasia, an inflammatory process in a disease, an ophthalmic disorder, pulmonary inflammation, a central nervous system disorder, allergic rhinitis, respiratory distress syndrome, endotoxin shock syndrome, atherosclerosis, a microbial infection, a cardiovascular disorder, a urinary disorder, a urological disorder, endothelial dysfunction, organ deterioration, tissue deterioration, or activation, adhesion and infiltration of neutrophils at the site of inflammation.

25. (Withdrawn) The method of claim 24, wherein the neoplasia is a brain cancer, a bone cancer, an epithelial cell-derived neoplasia (epithelial carcinoma), a basal cell carcinoma, an adenocarcinoma, a gastrointestinal cancer, a lip cancer, a mouth cancer, an esophageal cancer, a small bowel cancer, a stomach cancer, a colon cancer, a liver cancer, a bladder cancer, a pancreas cancer, an ovary cancer, a cervical cancer, a lung cancer, a breast cancer, a skin cancer, a squamous cell cancer, a basal cell cancer, a prostate cancer, a renal cell carcinoma, a cancerous tumor, a growth, a polyp, an adenomatous polyp, a familial adenomatous polyposis or a fibrosis resulting from radiation therapy.

26. (Withdrawn) The method of claim 24, wherein the central nervous system disorder is cortical dementia, Alzheimer's disease, vascular dementia, multi-infarct dementia, pre-senile dementia, alcoholic dementia, senile dementia, or central nervous system damage resulting from stroke, ischemia or trauma.

27. (Withdrawn) A method for inhibiting platelet aggregation in a patient in need thereof comprising administering to the patient a therapeutically effective amount of the composition of claim 14.

28. (Original) A composition comprising at least one compound of claim 1 and at least one compound that donates, transfers or releases nitric oxide, or induces the production of endogenous nitric oxide or endothelium-derived relaxing factor, or is a substrate for nitric oxide synthase.

29. (Original) The composition of claim 28, further comprising a pharmaceutically acceptable carrier.

30. (Original) The composition of claim 28, wherein the compound that donates, transfers, or releases nitric oxide, or induces the production of endogenous nitric oxide or endothelium-derived relaxing factor or is a substrate for nitric oxide synthase is an S-nitrosothiol.

31. (Original) The composition of claim 30, wherein the S-nitrosothiol is S-nitroso-N-acetylcysteine, S-nitroso-captopril, S-nitroso-N-acetylpenicillamine, S-nitroso-homocysteine, S-nitroso-cysteine, S-nitroso-glutathione, or S-nitroso-cysteinyl-glycine.

32. (Original) The composition of claim 30, wherein the S-nitrosothiol is:

- (i) $\text{HS}(\text{C}(\text{R}_e)(\text{R}_f))_m\text{SNO}$;
- (ii) $\text{ONS}(\text{C}(\text{R}_e)(\text{R}_f))_m\text{R}_e$; or
- (iii) $\text{H}_2\text{N}-\text{CH}(\text{CO}_2\text{H})-(\text{CH}_2)_m-\text{C}(\text{O})\text{NH}-\text{CH}(\text{CH}_2\text{SNO})-\text{C}(\text{O})\text{NH}-\text{CH}_2-\text{CO}_2\text{H}$;

wherein m is an integer from 2 to 20; R_e and R_f are each independently a hydrogen, an alkyl, a cycloalkoxy, a halogen, a hydroxy, an hydroxyalkyl, an alkoxyalkyl, an arylheterocyclic ring, a cycloalkylalkyl, a heterocyclicalkyl, an alkoxy, a haloalkoxy, an amino, an alkylamino, a dialkylamino, an arylamino, a diarylamino, an alkylarylamino, an alkoxyhaloalkyl, a haloalkoxy, a sulfonic acid, a sulfonic ester, an alkylsulfonic acid, an arylsulfonic acid, an arylalkoxy, an alkylthio, an arylthio, a cyano, an aminoalkyl, an aminoaryl, an aryl, an arylalkyl, a carboxamido, a alkylcarboxamido, an arylcarboxamido, an amidyl, a carboxyl, a carbamoyl, an alkylcarboxylic acid, an arylcarboxylic acid, an alkylcarbonyl, an arylcarbonyl, an ester, a carboxylic ester, an alkylcarboxylic ester, an arylcarboxylic ester, a haloalkoxy, a sulfonamido, an alkylsulfonamido, an arylsulfonamido, an alkylsulfonyl, an alkylsulfonyloxy, an arylsulfonyl, an arylsulfonyloxy, a urea, a nitro, $-\text{T}-\text{Q}'-$, or $-(\text{C}(\text{R}_g)(\text{R}_h))_k-\text{T}-\text{Q}'$ or R_e and R_f taken together are an oxo, a methanthial, a heterocyclic ring, a cycloalkyl group, an oxime, a hydrazone or a bridged cycloalkyl group; Q' is $-\text{NO}$ or $-\text{NO}_2$; and T is independently a covalent bond, a carbonyl, an oxygen, $-\text{S}(\text{O})_o-$ or $-\text{N}(\text{R}_a)\text{R}_i-$, wherein o is an integer from 0 to 2, R_a is a lone pair of electrons, a hydrogen or an alkyl group; R_i is a hydrogen, an alkyl, an aryl, an alkylcarboxylic acid, an arylcarboxylic acid, an alkylcarboxylic ester, an arylcarboxylic ester, an alkylcarboxamido, an arylcarboxamido, an alkylsulfinyl, an alkylsulfonyl, an alkylsulfonyloxy, an arylsulfinyl, an arylsulfonyloxy, an arylsulfonyl, a sulfonamido, a carboxamido, a carboxylic ester, an aminoalkyl, an aminoaryl, $-\text{CH}_2-\text{C}(\text{T}-\text{Q}')(\text{R}_g)(\text{R}_h)$, or $-(\text{N}_2\text{O}_2^-)$ $\bullet\text{M}^+$, wherein M^+ is an organic or inorganic cation; with the proviso that when R_i is $-\text{CH}_2-\text{C}(\text{T}-\text{Q}')(\text{R}_g)(\text{R}_h)$ or

$-(N_2O_2)\bullet M^+$; then "-T-Q'" can be a hydrogen, an alkyl group, an alkoxyalkyl group, an aminoalkyl group, a hydroxy group or an aryl group; and R_g and R_h at each occurrence are independently R_e .

33. (Original) The composition of claim 28, wherein the compound that donates, transfers, or releases nitric oxide, or induces the production of endogenous nitric oxide or endothelium-derived relaxing factor, or is a substrate for nitric oxide synthase is L-arginine, L-homoarginine, N-hydroxy-L-arginine, nitrosated L-arginine, nitrosylated L-arginine, nitrosated N-hydroxy-L-arginine, nitrosylated N-hydroxy-L-arginine, nitrosated L-homoarginine, nitrosylated L-homoarginine), citrulline, ornithine, glutamine, lysine, an arginase inhibitor or a nitric oxide mediator.

34. (Original) The composition of claim 28, wherein the compound that donates, transfers, or releases nitric oxide, or induces the production of endogenous nitric oxide or endothelium-derived relaxing factor, or is a substrate for nitric oxide synthase is:

- (i) a compound that comprises at least one ON-O- or ON-N- group;
- (ii) a compound that comprises at least one O_2N-O -, O_2N-N - or O_2N-S - or group;
- (iii) a N-oxo-N-nitrosoamine having the formula: $R^{1''}R^{2''}N-N(O-M^+)-NO$, wherein $R^{1''}$ and $R^{2''}$ are each independently a polypeptide, an amino acid, a sugar, an oligonucleotide, a straight or branched, saturated or unsaturated, aliphatic or aromatic, substituted or unsubstituted hydrocarbon, or a heterocyclic group, and M^+ is an organic or inorganic cation.

35. (Original) The composition of claim 34, wherein the compound comprising at least one ON-O- or ON-N- group is an ON-O-polypeptide, an ON-N-polypeptide, an ON-O-amino acid, an ON-N-amino acid, an ON-O-sugar, an ON-N-sugar, an ON-O-oligonucleotide, an ON-N-oligonucleotide, a straight or branched, saturated or unsaturated, substituted or unsubstituted, aliphatic or aromatic ON-O-hydrocarbon, a straight or branched, saturated or unsaturated, substituted or unsubstituted, aliphatic or aromatic ON-N-hydrocarbon, an ON-O-heterocyclic compound or an ON-N-heterocyclic compound.

36. (Original) The composition of claim 34, wherein compound comprising at least one O_2N-O -, O_2N-N - or O_2N-S - group is an O_2N-O -polypeptide, an O_2N-N -polypeptide, an O_2N-S -polypeptide, an O_2N-O -amino acid, O_2N-N -amino acid, O_2N-S -amino acid, an O_2N-O -sugar, an O_2N-N -sugar, O_2N-S -sugar, an O_2N-O -oligonucleotide, an O_2N-N -oligonucleotide, an O_2N-S -oligonucleotide, , a straight or branched, saturated or unsaturated, aliphatic or aromatic, substituted or

unsubstituted O₂N-O-hydrocarbon, a straight or branched, saturated or unsaturated, aliphatic or aromatic, substituted or unsubstituted O₂N-N-hydrocarbon, a straight or branched, saturated or unsaturated, aliphatic or aromatic, substituted or unsubstituted O₂N-S-hydrocarbon, an O₂N-O-heterocyclic compound, an O₂N-N-heterocyclic compound or an O₂N-S-heterocyclic compound.

37. (Original) The composition of claim 28, further comprising at least one therapeutic agent.

38. (Original) The composition of claim 37, wherein the therapeutic agent is a steroid, a nonsteroidal antiinflammatory compound, a 5-lipoxygenase (5-LO) inhibitor, a leukotriene B₄ receptor antagonist, a leukotriene A₄ hydrolase inhibitor, a 5-HT agonist, a HMG CoA inhibitor, a H₂ antagonist, an antineoplastic agent, an antiplatelet agent, a thrombin inhibitor, a thromboxane inhibitor, a decongestant, a diuretic, a sedating or non-sedating anti-histamine, an inducible nitric oxide synthase inhibitor, an opioid, an analgesic, a *Helicobacter pylori* inhibitor, a proton pump inhibitor, an isoprostane inhibitor, or a mixture of two or more thereof.

39. (Original) The composition of claim 38, wherein the nonsteroidal antiinflammatory compound is acetaminophen, aspirin, diclofenac, ibuprofen, ketoprofen, indomethacin or naproxen.

40. (Withdrawn) A method for treating or reducing inflammation, pain or fever in a patient in need thereof comprising administering to the patient a therapeutically effective amount of the composition of claim 29 or 37.

41. (Withdrawn) A method for treating a gastrointestinal disorder, or improving the gastrointestinal properties of a COX-2 inhibitor in a patient in need thereof comprising administering to the patient a therapeutically effective amount of the composition of claim 29 or 37.

42. (Withdrawn) The method of claim 41, wherein the gastrointestinal disorder is an inflammatory bowel disease, Crohn's disease, gastritis, irritable bowel syndrome, ulcerative colitis, a peptic ulcer, a stress ulcer, a bleeding ulcer, gastric hyperacidity, dyspepsia, gastroparesis, Zollinger-Ellison syndrome, gastroesophageal reflux disease, a bacterial infection, short-bowel (anastomosis) syndrome, or a hypersecretory state associated with systemic mastocytosis or basophilic leukemia and hyperhistaminemia.

43. (Withdrawn) A method for facilitating wound healing in a patient in need thereof comprising administering to the patient a therapeutically effective amount of the composition of claim 29 or 37.

44. (Withdrawn) The method of claim 43, wherein the wound is an ulcer.

45. (Withdrawn) A method for treating or reversing renal and/or respiratory toxicity in a patient in need thereof comprising administering to the patient a therapeutically effective amount of the composition of claim 29 or 37.

46. (Withdrawn) A method for treating a disorder resulting from elevated levels of COX-2 in a patient in need thereof comprising administering to the patient a therapeutically effective amount of the composition of claim 29 or 37.

47. (Withdrawn) The method of claim 46, wherein the disorder resulting from elevated levels of COX-2 is angiogenesis, arthritis, asthma, bronchitis, menstrual cramps, premature labor, tendinitis, bursitis, a skin-related condition, neoplasia, an inflammatory process in a disease, an ophthalmic disorder, pulmonary inflammation, a central nervous system disorder, allergic rhinitis, respiratory distress syndrome, endotoxin shock syndrome, atherosclerosis, a microbial infection, a cardiovascular disorder, a urinary disorder, a urological disorder, endothelial dysfunction, organ deterioration, tissue deterioration, or activation, adhesion and infiltration of neutrophils at the site of inflammation.

48. (Withdrawn) The method of claim 47, wherein the neoplasia is a brain cancer, a bone cancer, an epithelial cell-derived neoplasia (epithelial carcinoma), a basal cell carcinoma, an adenocarcinoma, a gastrointestinal cancer, a lip cancer, a mouth cancer, an esophageal cancer, a small bowel cancer, a stomach cancer, a colon cancer, a liver cancer, a bladder cancer, a pancreas cancer, an ovary cancer, a cervical cancer, a lung cancer, a breast cancer, a skin cancer, a squamous cell cancer, a basal cell cancer, a prostate cancer, a renal cell carcinoma, a cancerous tumor, a growth, a polyp, an adenomatous polyp, a familial adenomatous polyposis or a fibrosis resulting from radiation therapy.

49. (Withdrawn) The method of claim 47, wherein the central nervous system disorder is cortical dementia, Alzheimer's disease, vascular dementia, multi-infarct dementia, pre-senile dementia, alcoholic dementia, senile dementia, or central nervous system damage resulting from stroke, ischemia or trauma.

50. (Withdrawn) A method for inhibiting platelet aggregation in a patient in need thereof comprising administering to the patient a therapeutically effective amount of the composition of claim 29 or 37.

51. (Withdrawn) A kit comprising at least one compound of claim 1.

52. (Withdrawn) The kit of claim 51, further comprising (i) at least one compound that donates, transfers or releases nitric oxide, induces the production of endogenous nitric oxide or endothelium-derived relaxing factor, or is a substrate for nitric oxide synthase; (ii) at least one therapeutic agent; or (iii) at least one compound that donates, transfers or releases nitric oxide, induces the production of endogenous nitric oxide or endothelium-derived relaxing factor, or is a substrate for nitric oxide synthase and at least one therapeutic agent.

53. (Withdrawn) The kit of claim 52, wherein the at least one compound that donates, transfers or releases nitric oxide, induces the production of endogenous nitric oxide or endothelium-derived relaxing factor, or is a substrate for nitric oxide synthase; the at least one therapeutic agent; or the at least one compound that donates, transfers or releases nitric oxide, induces the production of endogenous nitric oxide or endothelium-derived relaxing factor, or is a substrate for nitric oxide synthase and at least one therapeutic agent; are in the form of separate components in the kit

54. (Withdrawn) A kit comprising the composition of claim 14, 29 or 37.

55. (Currently Amended) A compound selected from the group consisting of:

1-(1-(cyclohexylmethyl)-3-(hydroxymethyl)pyrazol-5-yl)-4-(methylsulfonyl) benzene;
4-(1-(cyclohexylmethyl)-3-((2-hydroxyethoxy)methyl)pyrazol-5-yl)-1-(methylsulfonyl)benzene;
1-(3-(hydroxymethyl)-1-benzylpyrazol-5-yl)-4-(methylsulfonyl)benzene;
1-(3-((1E)-3-hydroxyprop-1-enyl)-1-(cyclohexylmethyl)pyrazol-5-yl)-4-(methylsulfonyl) benzene;
1-(1-(cyclohexylmethyl)-3-(3-hydroxypropyl)pyrazol-5-yl)-4-(methylsulfonyl)benzene;
1-(1-(cyclohexylmethyl)-3-vinylpyrazol-5-yl)-4-(methylsulfonyl)benzene;
methyl (2E)-3-(1-(cyclohexylmethyl)-5-(4-(methylsulfonyl)phenyl)pyrazol-3-yl) prop-2-enoate;
methyl 5-(4-(methylsulfonyl)phenyl)-1-benzylpyrazole-3-carboxylate;
1-(1-(cyclohexylmethyl)-3-((nitrooxy)methyl)pyrazol-5-yl)-4-(methylsulfonyl)benzene;
4-(1-(cyclohexylmethyl)-3-((2-(nitrooxy)ethoxy)methyl)pyrazol-5-yl)-1-(methylsulfonyl) benzene;
4-(methylsulfonyl)-1-(3-((nitrooxyl)methyl)-1-benzylpyrazol-5-yl)benzene;
1-(3-((1E)-3-nitrooxyprop-1-enyl)-1-(cyclohexylmethyl)pyrazol-5-yl)-4-(methylsulfonyl) benzene;

1-(1-(cyclohexylmethyl)-3-(3-(nitrooxy)propyl)pyrazol-5-yl)-4-(methylsulfonyl) benzene;
~~3-(4-(methylsulfonyl)phenyl) 5-(trifluoromethyl)(2-pyridyl) phenyl ketone;~~
~~2-(3-(4-(methylsulfonyl)phenyl) 5-(trifluoromethyl)(2-pyridyl)) 2-phenylethanenitrile;~~
~~3-fluorophenyl 2-(4-methylsulfonylphenyl)(3-pyridyl) ketone~~
~~2-(4-(methylsulfonyl)phenyl)(3-pyridyl) 2-pyridyl ketone;~~
~~ethyl 3-((2-(4-(methylsulfonyl)phenyl) 3-pyridyl)carbonyl)benzoate;~~ or a pharmaceutically acceptable salt thereof.

56. (Original) A composition comprising at least one compound of claim 55 and a pharmaceutically acceptable carrier.

57. (Original) The composition of claim 56, further comprising (i) at least one compound that donates, transfers or releases nitric oxide, induces the production of endogenous nitric oxide or endothelium-derived relaxing factor, or is a substrate for nitric oxide synthase; (ii) at least one therapeutic agent; or (iii) at least one compound that donates, transfers or releases nitric oxide, induces the production of endogenous nitric oxide or endothelium-derived relaxing factor, or is a substrate for nitric oxide synthase and at least one therapeutic agent.

58. (Withdrawn) A kit comprising at least one compound of claim 55.